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The Morning Star

NORTHERN CHEYENNE TRIBE
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The Morning Star

January 9, 2013

Kenneth Blodgett
Surface Transportation Board
395 E Street, SW
Washington, D.C. 20423-0001,

Attention: Environmental filing, Docket No. FD 30186

Dear Mr. Blodgett,

The Northern Cheyenne Tribe ("Tribe") is a federally recognized Indian tribe that occupies the Northern Cheyenne Reservation ("Reservation"), which encompasses over 444,000 acres of land in southeastern Montana. Appendix A at 1-1, Figure 1. Pursuant to the National Environmental Policy Act ("NEPA"), the Tribe submits these scoping comments on the pending application to build a railroad line that connects the Otter Creek Coal Tracts ("Otter Creek") in southeastern Montana to existing railroad infrastructure to the north of the Reservation. The proposal would facilitate the transport of coal from Otter Creek to users in the United States and, potentially, for export to Asia and other markets.

The proposed railroad line is designed to support planned mining activities at Otter Creek. The Tribe has a significant interest in the proposed railroad line and connected and cumulative actions (collectively the "Proposed Action") due to proximity of the Proposed Action to the Reservation. In light of this interest, the Tribe requests that the Surface Transportation Board ("STB") consult with the Tribe during every step of NEPA review for the Proposed Action. To do so would be consistent with both NEPA and the sacred fiduciary obligation owed the Tribe by the federal government.

The Tribe is concerned that the Proposed Action may undermine its significant efforts to protect the environment and human health on the Reservation and minimize the impact of energy development on the Reservation environment. Accordingly, the Tribe calls on the STB to include in its NEPA assessment a thorough analysis of the direct, indirect, and cumulative impacts associated with the Proposed Action, with particular attention to any disproportionate effects that the Proposed Action may have on the Tribe, its members, and the Reservation environment.

One possibility for minimizing the potential impacts from railroad construction and operation would be to adopt a railroad alignment that is set further away from the Reservation boundary, and also further from important waterbodies such as the Tongue River, Greenleaf Creek, and Rosebud Creek. The Tribe accordingly calls on the STB to evaluate such an

alternative alignment as a means for minimizing impacts to the Tribe and the Reservation environment from construction activities and operations associated with the Proposed Action.

Finally, the Tribe requests information about designating the Tribe as a "cooperating" entity for this NEPA process and about available funding to facilitate the Tribe's role in this process and efforts to mitigate impacts to the Tribe from the Proposed Action.

I. Background

As briefly described below, the Northern Cheyenne Tribe has a long history of taking extraordinary steps to protect the environment in around its Reservation and avoid adverse impacts of coal development and related activities. It has done so despite facing severe economic and social challenges and even though revenue from any source, even coal, is sorely needed.

Energy resources in and around the Reservation have drawn significant attention and controversy over the last fifty years. Appendix A at 2-26 through 2-31. Major interest in coal development on the Reservation first occurred in 1965, resulting in public sales of Reservation coal leases in the late 1960s. *Id.* at 2-27. However, in 1974, upon the Tribe's petition, the Secretary of the Interior issued a decision that effectively blocked all coal development on the Reservation. *Id.* at 2-28.

Since then, the Tribe has not permitted on-Reservation coal mining. However, there has been considerable effort to develop energy resources on lands surrounding the Reservation. For example, in the 1970s, a consortium of utilities launched a plan to build two 750 MW coal-fired power plants in Colstrip, Montana, approximately 15 miles north of the Reservation boundary. Appendix A at 2-28. Concerned with the impacts that the Colstrip facility would have on air quality and human health within the Reservation, the Tribe became the first government in the United States to voluntarily raise the air quality standard within its territory to "Class I," a standard that had previously only applied to parks and wilderness areas. *Id.* at 2-29. As a result, the Colstrip utilities were required to install the most stringent pollution control technology available at the time, fund a Tribal air quality monitoring program, and provide other economic benefits to the Tribe. *Id.* at 2-29.

Additional interest in off-Reservation coal development in the early 1980s led Interior Secretary James Watt to initiate a massive coal lease sale in the Powder River Coal Region of Montana and Wyoming. Appendix A at 2-29. The Montana tracts encircled the Reservation, and the Tribe was again concerned that the mining activities would adversely impact the Reservation environment. *Id.* The Tribe ultimately succeeded in its legal change to the 1982 leases—all leases for new production tracts were terminated, and the Tribe reached a settlement with the company holding the Colstrip mine extension leases that provided impact funding and other economic benefits to the Tribe. *Id.* at 2-30.

More recently, the Tribe was involved in the 1996 effort to oppose extension of the Montco mining permit, and secured a court-ordered termination of that permit. The Tribe also led successful litigation beginning in 2006 to protect water quality in the Tongue River from impacts associated with coalbed methane operations.

The Tribe has particular concern with the effects that proposed mining at Otter Creek will have on the Reservation and Tribal members. The Otter Creek tracts, estimated to contain 533 million tons of recoverable federal coal, are located approximately three miles from the eastern boundary of the Reservation. In 2002, after asserting claims challenging coal-related development at Otter Creek, the Tribe entered into a settlement agreement with the Montana State Board of Land Commissioners ("Board"). Among many other terms, the Board agreed to ensure that, upon its authorization of the leasing of Otter Creek, operating plans would be implemented to promote Tribal employment and contracting, ensure proper on-Reservation conduct by the lessee and its employees/contractors, require environmental monitoring to identify impacts on the Reservation, and ensure protection of the Tribe's cultural resources. The final versions of these operating plans, which were approved in November 2012 and are currently in force, address some of the impacts from mining at Otter Creek, but do not address impacts from the related Tongue River Railroad proposal and other connected/cumulative actions.

II. Scope of Assessment

NEPA requires the STB to consider all direct, indirect, and cumulative impacts that may result from the project proposal as well as connected and cumulative actions. *See* 40 C.F.R. § 1508.25. The Tribe is concerned that the Proposed Action could have significant disproportionate impacts to the Tribe and its members, and urges STB to thoroughly evaluate and mitigate such impacts. Disproportionate adverse impacts are likely because Otter Creek is located only three miles from the eastern boundary of the Reservation, the proposed railroad would run along the eastern boundary of the Reservation parallel to the Tongue River and other important waterbodies, and existing conditions on the Reservation may make Tribal members more susceptible to impacts from the Proposed Action. The Tribe is particularly concerned that coal dust and diesel emissions from construction activities and operations associated with the Proposed Action will adversely affect the natural environment on Reservation, the health of Tribal members, and the Tribe's religious and cultural resources. These concerns are described in more detail below.

a. Impacts to the Reservation Environment

The Proposed Action's impact on air quality and visibility on and near the Reservation is a significant concern to the Tribe. The Tribe has expended considerable resources to protect air quality on the Reservation. *See generally* Appendix A at 6-40 through 6-42. As mentioned above, the Tribe was the first government in the United States to voluntarily elevate the air quality standard on the Reservation to the most pristine "Class I" designation. *Id.* at 6-40. However, even with this stringent standard, Reservation air quality is currently impacted by numerous sources, including the Colstrip power plants. *Id.* at 6-41 through 6-42. The Tribe's considerable efforts to protect Reservation air quality and visibility would be further undermined if coal dust, diesel emissions, and other emissions from construction activities and operations associated with the Proposed Action are not adequately mitigated. Appendix B sets forth additional air quality concerns of the Tribe.

The Tribe is also concerned with the potential impacts that the Proposed Action will have on ground and surface water quality within the Reservation. Preserving water quality on the

Reservation is especially important to the Tribe, as the Reservation is located in an arid portion of the western United States where access to water is limited. *See generally* Appendix A at 6-2 through 6-40. Water quality on portions of the Tongue River, which forms the eastern boundary of the Reservation, and its tributaries, is already impaired, largely as a result of agricultural runoff, discharges from municipal point sources, and discharges from coalbed methane operations. *Id.* at 6-13 through 6-18. The Tribe is concerned that coal dust, diesel emissions, and runoff from construction activities and operations associated with the Proposed Action will cause further impairment of Reservation waters and may limit the Tribe's use of water for human consumption, agriculture, and other uses. *Id.* at 6-33 through 6-40. Appendix C provides more details of the Tribe's water quality concerns.

The Proposed Action may also impact the Tribe's wildlife resources, which are culturally and economically important to the Tribe. *See generally* Appendix A at 6-45 through 6-54. Construction and operation activities associated with the Proposed Action could disturb a wide variety of wildlife and their longstanding migration patterns on and near the Reservation, including big game animals, small mammals, migratory birds, raptors, waterfowl, amphibians, reptiles, and fish. Many of these species are already impaired, and some are listed as "threatened" or "endangered" under the Endangered Species Act. *Id.* at 6-51.

b. Human Health Impacts

The Tribe is also concerned that the Proposed Action may result in disproportionate adverse health effects to Tribal members. Of particular concern is exposure to coal dust and diesel exhaust emissions as well as toxic chemicals found in such emissions (such as lead, selenium, and mercury). Exposure to coal dust and diesel exhaust are associated with a wide range of health effects such as stunted lung development, increased probability of heart attacks, cancer, asthma, kidney disease, and infant mortality.

The Tribe calls on the STB to fully evaluate, minimize when possible, and mitigate potential health effects that the Tribe's members may suffer as a result of the Proposed Action. In conducting this assessment, the STB should consider existing health conditions on the Reservation and the cumulative effect of exposure to pollutants resulting from the Proposed Action and other pre-existing or reasonably foreseeable activities on and near the Reservation.

c. Impacts to Cultural Resources

The Tribe also calls on the STB to evaluate the effects of the Proposed Action on sites of religious and cultural significance to the Tribe. *See generally* Appendix A at 7-1 through 7-30. Sites of religious significance often feature graves, cemeteries, and other burials; large cairns and pilgrimage/trail marker cairns; vision quest and fasting structures; eagle trapping pits; medicine wheels, arrows, alignments, and prayer lines; very large and very small rings; and rock art motifs. *Id.* at 7-6 through7-7. Sites of cultural importance include springs, rivers, swamps, and groundwater; ceremonial sites; and places where special plants, animals, and minerals are found. *Id.* at 7-9 through 7-16. These types of sites occur throughout the Tongue River Valley and may be impacted by construction activities and operations associated with the Proposed Action. *Id.* at 7-26 through 7-29. Further information detailing this is in Appendix D.

d. Other Potential Impacts to the Tribe

In addition to the potential impacts discussed above, the Proposed Action could have numerous other adverse effects on the Tribe that should be evaluated, minimized, and mitigated. These include the following:

- Impacts to the Reservation transportation systems caused by increased traffic and congestion associated with the Proposed Action;
- Impacts to the Tribe's land uses in areas adjacent to the Proposed Action, including impacts to Tribal trust acres located on the east side of the Tongue River that may be in the direct path of the proposed railroad;
- Navigability impacts to the Tongue River and other waterbodies;
- Impacts to water availability in the Tongue River Basin (including impacts to the Tribe's Federal Indian Reserved Water Rights in the Tongue River Basin);
- Fire-related impacts to Tribal lands and resources on and near the Reservation;
- Noise and vibration impacts caused by construction and operation of the Proposed Action;
- Socio-economic impacts to the Tribe that result from an influx of workers for the construction and operation of the Proposed Action;
- Aesthetic impacts to the Tongue River Valley, Otter Creek Valley, and the Reservation;
- Impacts to Tribal members' recreational, ceremonial and cultural activities in the Tongue River Valley, Otter Creek Valley, and on the Reservation in areas impacted by the Proposed Action;
- Environmental justice implications of the Proposed Action, including the inequity of allowing the Tribe to suffer disproportionate impacts while receiving only limited benefits from the Proposed Action.

III. Conclusion

The Tribe calls on the STB to: (1) conduct a thorough review of all direct, indirect, and cumulative the impacts that may result from the Proposed Action, with special focus on and disproportionate impacts to the Tribe and its members described above; (2) evaluate alternatives that minimize and mitigate any impacts to the Tribe, including an alternative railroad alignment that would locate railroad operations as far as possible from the eastern Reservation boundary, the Tongue River, and other important waterbodies; (3) provide information about designating the Tribe as a cooperating entity for NEPA review of the Proposed Action and about funding to facilitate Tribal participation in such review; and (4) and consult with the Tribe during every step of the NEPA process.

Sincerely,

John J. Robinson 1/9/13

John J. Robinson
President
Northern Cheyenne Tribe

Date

Appendix A – Northern Cheyenne Narrative Report
Appendix B – Air Quality
Appendix C – Water Quality
Appendix D – Cultural Resources


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Appendix A

APPENDIX A

The Northern Cheyenne Tribe and Its Reservation

2002

A Report to the

U.S. Bureau of Land Management
and the
State of Montana Department of Natural Resources and Conservation

Prepared by
The Northern Cheyenne Tribe

April 2002

The Northern Cheyenne Tribe
and
Its Reservation

April 2002

ACKNOWLEDGMENTS

As is evident from the size of this report, the researching, drafting, and editing of this report was a team effort. The Tribe would like to thank each member of the team for their efforts in putting together this report on a very tight deadline. In particular, the Tribe would like to acknowledge the efforts of the following team members:

John B. Arum. Mr. Arum served as overall editor for the report and was the principal author of Chapters 4 (Tribal Government and Fiscal Resources) and 5 (Reservation Programs, Services and Facilities). Mr. Arum also contributed material to Chapter 2 (Overview of Northern Cheyenne Culture and History). Mr. Arum is a partner in the Seattle law firm of Ziontz, Chestnut, Varnell, Berley & Slonim, the Tribe's long-time legal counsel. Mr. Arum has represented Indian tribes for the past 12 years and is very familiar with Tribal government institutions and functions. Mr. Arum holds a B.A. in political science from Reed College, 1984, and a J.D. from the University of Washington, 1990.

James P. Boggs. Dr. Boggs served as one of two principal authors of Chapter 3 (Social and Economic Conditions) and also contributed material to Chapters 2 (Overview of Northern Cheyenne Culture and History) and 5 (Reservation Programs, Services and Facilities). Dr. Boggs is an anthropologist with over twenty five years experience working and publishing in the areas of social impact assessment, cultural resources, applied anthropology, and the effective policy utilization of social knowledge. After teaching anthropology at San Jose State University, he joined the staff of the Northern Cheyenne Research Project from 1976-1980. Subsequently, he has been in private practice. He has conducted social impact assessment and ethnographic research studies for environmental impact statements, for the first Tribal redesignation of Reservation air quality status under the Clean Air Act, and for nominating a Native American traditional cultural property to the National Register of Historic Places, among others. Currently a Faculty Affiliate in the Department of Anthropology, and Senior Associate of the Public Policy Research Institute, University of Montana, Dr. Boggs has authored numerous articles for scholarly and legal journals on social impact assessment and the uses of social science knowledge. Dr. Boggs holds a Ph.D. in anthropology from the University of Oregon, 1974.

Sherri Deaver. Dr. Deaver is primary author of Chapter 7 (Northern Cheyenne Cultural Resources) and made a substantial contribution to Chapter 2 (Overview of Northern Cheyenne Culture and History). Dr. Deaver has over 20 years experience working with cultural resources in southeast Montana and over 15 years experience working with the Northern Cheyenne. She is a principle in the anthropological consulting firm Ethnoscience, Inc. Her past work includes cultural and/or archaeological review of the Powder River Coal Leasing in the 1980s, the Tongue River Dam Project in the 1990s, the Chalk Buttes cultural assessment conducted jointly by the Northern Cheyenne Tribe, Custer National Forest and Ethnoscience. Additionally she worked with Elder Bill Tallbull on a cultural review of the proposed Tongue River Railroad. She led Bureau of Land Management (BLM) sponsored surveys on the Otter Creek and Hanging Woman drainages. Most recently she co-authored a cultural resource review of the proposed CBM

project area for the BLM.

Joe Little Coyote. Mr. Little Coyote served as the principal author of Chapter 2 (Overview of Northern Cheyenne Culture and History). Mr. Little Coyote also contributed to Chapter 7 (Northern Cheyenne Cultural Resources). Mr. Little Coyote is a member of the Northern Cheyenne Tribe and the Northern *Suhtio.* After seven years of service with the United States Marine Corps, including a tour of duty in Vietnam, Mr. Little Coyote devoted himself to the intensive study of Cheyenne culture. He has served as a Vision Quest Instructor since 1970, an Arrow Man starting in 1974, a Piercing Ceremonial Instructor since 1980, and a Buffalo Lodge Instructor since 1984. Mr. Little Coyote also holds a Masters degree in Education from Harvard University, 1976, and a Certificate of Advanced Study, in Administration, Planning & Social Policy from Harvard University, 1978. Mr. Little Coyote currently heads up the Tribe's Economic Development program and was the lead author of the Tribe's 2001 Comprehensive Economic Development Stategy (CEDS) report.

Thomas M. Power. Dr. Power served as one of the principal authors of Chapter 3 (Social and Economic Conditions). Dr. Power is currently Professor of Economics and Chairman of the Economics Department at the University of Montana. He specializes in natural resource and regional economic development issues. Professor Power has taught at Princeton, Lehigh, and the University of Montana where he has been since 1968. He has been Chairman of the Economics Department since 1978. Professor Power's most recent book**,** Post-Cowboy Economics: Pay and Prosperity in the New American West, was published in Summer 2001 by Island Press. Dr. Power is the author of three other books, a dozen book chapters and over a hundred papers, reports, and monographs in the field of resource economics and regional economic development. He regularly testifies before state and federal regulatory agencies on energy policy, natural resource development, environmental protection, and local economic development. He is a regular commentator on economic issues on Montana Public Radio and in the national press. Dr. Power holds a M.A. and Ph.D. in Economics from Princeton University.

Gail Small. Ms. Small provided invaluable advice, logistical support and constructive criticism to the report team. Ms. Small is a member of the Northern Cheyenne Tribe as is also known as "*Vea-hon-naut!*, Head Chief Woman." Ms. Small is the founding and current Director of Native Action, one of the first and most effective non-profit organizations established on an Indian Reservation. Ms. Small has also served as an elected member of the Northern Cheyenne Tribal Council. Ms. Small holds a J.D. from the University of Oregon, 1982 and a B.A. in Sociology from the University of Montana, 1978.

Eric W. Wessman, Mr. Wessman is one of two principal authors of Chapter 6 (Reservation Natural Resources). Mr. Wessman is a registered Professional Engineer in the states of Colorado and California and holds B.S. degrees in both Agricultural Engineering and Range Land Management from the University of Wyoming. Mr. Wessman serves as an associate engineer at Natural Resources Consulting Engineers (NRCE), a

civil, environmental, and water resources consulting firm with offices in Fort Collins, Colorado; Berkeley, California; and Eritrea, East Africa. Mr. Wessman's professional career is focused principally on performing hydrological and engineering analysis involving agricultural and municipal water systems and water rights. He has served as an expert witness in federal court in trials involving stream flow and water quality issues and in state water right transfers involving cases of forfeiture, abandonment, and lack of perfection determinations based on investigations of irrigation type and history. Mr. Wessman has extensive experience in the quantification of Indian Water Rights including economic evaluation of water use based on soil, climate, water availability, specification of agricultural and irrigation systems, and water resources supply and demand studies, including characterization of quantity and quality.

Laura Woodard. Ms. Woodard is the other principal author of Chapter 6 (Reservation Natural Resources). Ms. Woodard received a B.A. in Geology from Hartwick College in New York, 1996, and a M.S. in Geology from Colorado State University, 2000. Ms. Woodard serves as an assistant hydrogeologist at NRCE. At NRCE, Ms. Woodard is responsible for the evaluation and quantification of available groundwater for irrigation feasibility studies on several Indian Reservations including the Pechanga, Cahuilla, and Fort Independence Reservations in California. She has also investigated surface water/groundwater relationships in the Ancestral Missouri River Channel related to water right negotiations on the Fort Belknap Reservation in Montana. Ms. Woodard also coordinates several EPA Section 106 projects associated with the Clean Water Act for the Pechanga Tribe, including a Unified Watershed Assessment, a Non-point Source Management Plan, and a Quality Assurance Protection Plan.

In addition to the above authors and contributors, the Tribe would like to extend its appreciation to Gloria Waters, its Executive Administrator, and Dave Millegan, Director of the Environmental Protection Department, for providing essential administrative support for this project. The Tribe would also like to thank all of its Program Directors and other Tribal staff who gave up valuable time from their many responsibilities to provide information critical to the preparation of this report. The Tribe would also like to thank the administrators and employees of the Bureau of Indian Affairs, the Indian Health Service, the Colstrip Public Schools, the Lame Deer Public Schools, the St. Labre Indian School, the Busby School, Chief Dull Knife College, and the Montana Department of Transportation for contributing valuable information toward the production of this report. Finally, the Tribe would like to thank Heidi Reynolds, John Arum's legal assistant, for the many hours of editing, proofreading and word processing that made this report possible.

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CHAPTER 1

INTRODUCTION AND OVERVIEW

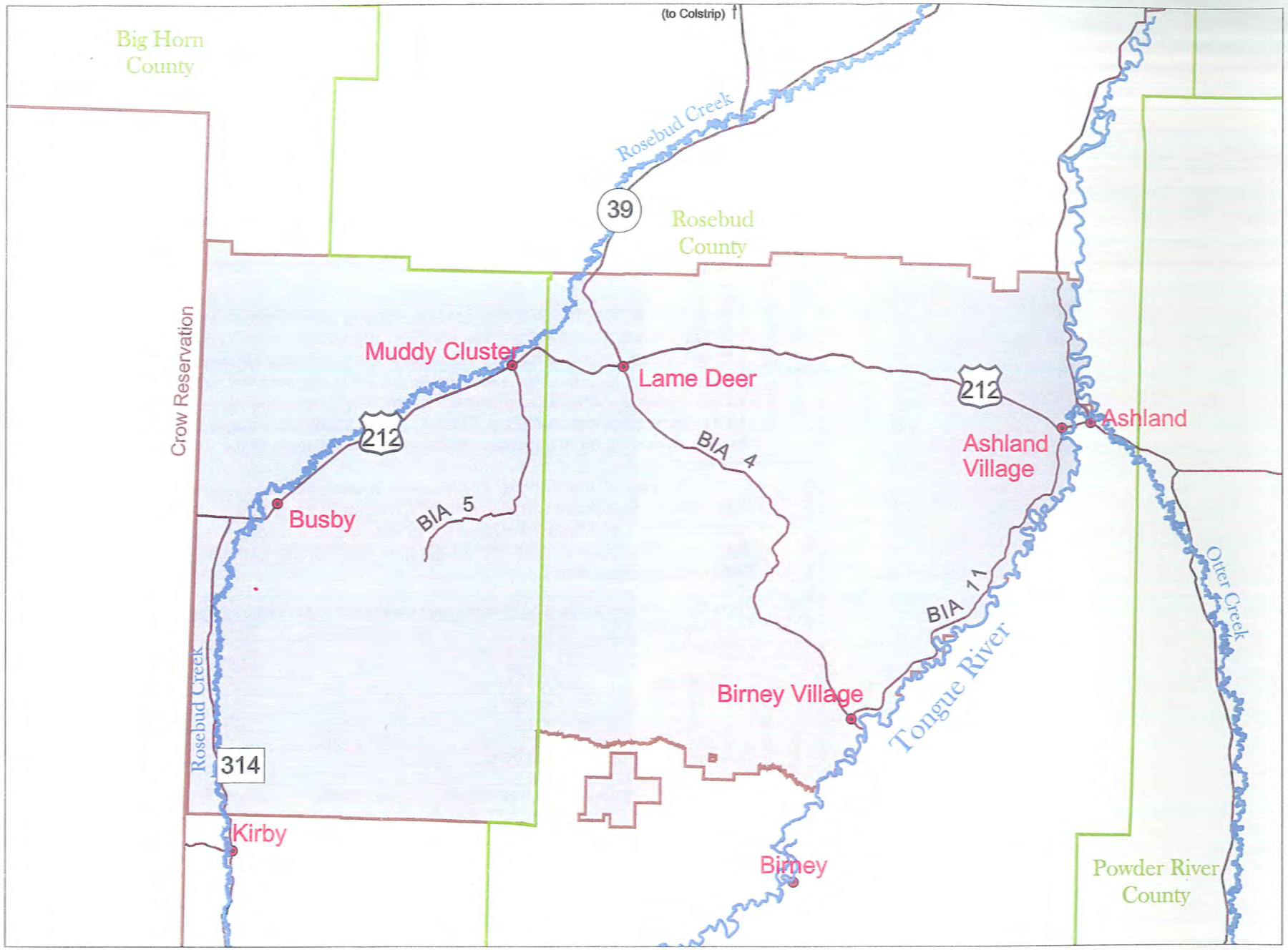
This report has been prepared by the Northern Cheyenne Tribe under contract with the Bureau of Land Management ("BLM"). The BLM is in the process of amending the Powder River and Billings Area Resource Management Plans to address large-scale development of coal-bed methane ("CBM") resources in southeastern Montana, including lands in the vicinity of the Northern Cheyenne Reservation. The purpose of the report is to characterize those aspects of the Reservation environment and resources, social, economic, cultural and physical, which have the potential to be affected by CBM and other energy development on adjacent lands. By identifying lands, resources and services which are likely to be vulnerable to impacts, the report is intended to assist BLM in meeting its trust obligations to prevent and/or mitigate the impacts of off-Reservation development on the Tribe and its Reservation.

Political Geography and Land Ownership. The Northern Cheyenne Tribe occupies a small reservation located in southeastern Montana. The eastern portion of the Reservation lies in Rosebud County, the western portion in Big Horn County. The much larger Crow Reservation abuts Northern Cheyenne lands to the west, while the Tongue River forms the Northern Cheyenne Reservation's eastern boundary. In all, the Reservation encompasses some 444,775 acres, or 699 square miles. Additionally, the Tribe owns tracts of unpopulated land just south of the Reservation in Montana, and near the sacred Bear Butte in South Dakota. Figure 1-1 shows the Northern Cheyenne Reservation proper and adjacent jurisdictions and features. Figure 1-2 shows the location of the Reservation in relation to existing and proposed energy developments.

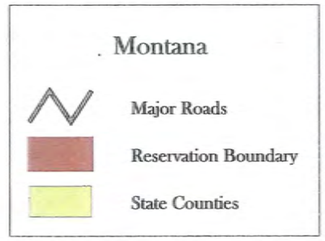
Although relatively small as western Indian reservations go, the Northern Cheyenne Reservation is unusual because the Tribe or its individual members own and control almost the entire Reservation land base. Only about 2 percent of the land is fee land (i.e., not held in trust – capable of being bought and sold), and only about 1 percent of the land is owned by non-Indians. None of the Indian-owned land is leased to non-Indians. Tribal and allotted grazing lands are leased to Northern Cheyenne ranchers.

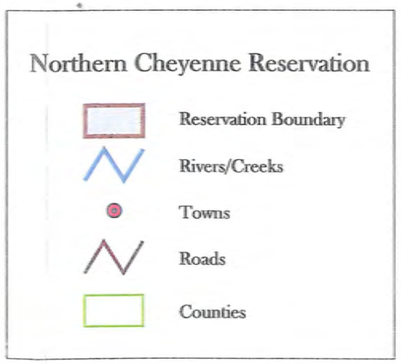
The Cheyennes' 99 percent ownership and control of the Reservation land base by Northern Cheyenne tribal members is not a historical accident, but the result of determined effort, much sacrifice, and skillful leadership and negotiations by a succession of earlier generations. It is one tangible expression of the value in which the Northern Cheyenne people hold their remaining homeland, which many Tribal members regard as a sacred trust inherited from their forebears.

Culture and Tradition. Some highlights of the difficult and remarkable history of the Northern Cheyenne Tribe's efforts to secure its land are presented in Chapter 2. Other relevant aspects of Northern Cheyenne culture, tradition, and history are also discussed in that Chapter. By contrast, Northern Cheyenne "cultural resources," i.e.











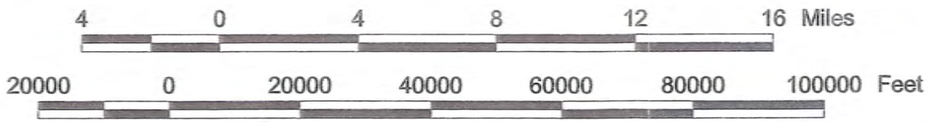


Figure 1

March 2002

General Vicinity Map of the Northern Cheyenne Reservation

Natural Resources Consulting Engineers, Inc.
Fort Collins, CO Asmara, Eritrea Berkeley, CA



Source: Bureau of Indian Affairs - Geographic Data Service Center - Northern Cheyenne coverages
NRCE coverage from USGS Topograohic maps

Legend

Towns · Area Mines · Crow Resevation Boundary
Roads · Reservation Boundary · Montana Counties

N W E S

Figure 2 **April 2002**

Northern Cheyenne Reservation
Vicinity Energy Developments

Natural Resources Consulting Engineers, Inc.
Fort Collins, CO Berkeley, CA Eritrea, Asmara

sites, landscapes, plant, animals and other resources that are culturally significant for the Tribe, are described more fully in Chapter 7.

The Northern Cheyennes' distinct culture underlies and underlines all of the other, sometimes more measurable, differences that separate the Tribe from neighboring populations. But culture and cultural difference are very difficult for many Euroamericans to fully appreciate – indeed, almost uniquely difficult. A developed theory of culture and cultural difference is quite recent as such ideas go. It still is often resisted by or only partly assimilated into the legal, policy, and institutional thinking that informs public decisionmaking. Yet it is essential that culture be taken seriously and respectfully as a fundamental reality, in environmental impact statements and land use planning that affects the Northern Cheyenne Reservation. This is necessary if such planning is to benefit the Tribe, and now, if it is to meet minimum legal requirements.

Population. Chapter 3 of this report presents information relating to Northern Cheyenne demographic and economic indicators. According to the 2000 Census, the population of the Northern Cheyenne Reservation is 4,470 persons, of whom 4,029 are Native American. When adjusted for the likely undercount, the actual Reservation population is approximately 5,000.

Many enrolled members of the Tribe also live off the Reservation at any one time. While something over 4,000 Cheyennes live on the Reservation, a recent count of the total enrolled membership of the Northern Cheyenne Tribe tallied about 7,440 persons. Thus, about 3,000 Tribal members live off the Reservation. But the ratio of on-Reservation to off-Reservation populations can shift rapidly. The Reservation and its community remain the homeland and anchor for most tribal members. As a community, and as individuals and families, the Northern Cheyenne generally are less mobile than non-Indians; they less readily pick up their roots and put them down somewhere else. Family members may leave for a while, but they also return. Despite extremely limited housing and other vital public services, changing economic conditions can bring more Tribal members back to the Reservation.

Reservation demographics confirm that the Northern Cheyenne community is a distinct community from other populations and communities in the region. For this reason, it should not be either ignored nor averaged into county-wide or regional analyses for environmental impact statement or land use planning purposes. For instance, the Northern Cheyenne Reservation is much more densely populated than the surrounding highly rural, ranching areas. The age and income profile of the Reservation population is much younger and poorer than non-Indian populations elsewhere in the region.

Many of the ways that the Northern Cheyenne differ from other groups in the area are interrelated, and are the outgrowth of the Tribe's own unique history and culture. Statistical tables and charts by themselves cannot reveal the history, nor the dynamic social and economic processes, that lie behind the raw numbers. The

standard social and economic data presented here needs to be considered in light of the Tribe's unique history and the particular "niche" it presently occupies in the broader regional social structure and economy.

Economics. It is no secret that Indian reservations are by and large among the poorest regions in the United States. The Northern Cheyenne Reservation is no exception. According to the 1990 census, per capita income on the Reservation was only 48 percent of that enjoyed in off-Reservation areas of Rosebud County, Montana. Median household income was likewise only 45 percent of the comparable figure for neighboring communities in the County. Likewise, the Bureau of Indian Affairs reports that unemployment on the Northern Cheyenne Reservation is a staggering 71 percent, with 1,719 Tribal members unemployed out of a total potential labor force of 2,437.

The intense poverty that afflicts the vast majority of reservations is not inevitable. Reflecting past policies, it is maintained presently by practices, attitudes, and institutions that those past policies entrenched. If opposing institutional arrangements (such as liberalized restrictions on commerce or taxation, for instance) favor Indian tribes who are in a position to take advantage of these arrangements, then tribes can prosper – just as corporations or other entities do who regularly are granted favorable policies. The resulting incomes would not only reduce poverty on the Reservation, but would contribute to the economic vitality of surrounding non-Indian regions. In contrast, however, the vast majority of tribes who are unable to take advantage of such options presently – generally because they are in isolated regions, and remain otherwise subject to entrenched institutions, practices, and attitudes within their regions – remain locked in poverty. In this sense, localized poverty is not so much a *condition* of a community as it is a *relationship* between that local community and its region.

The present circumstance, as southeastern Montana faces another energy-boom cycle, may either worsen or alleviate the Northern Cheyenne Tribe's disadvantaged position within the regional economy. The previous energy development boom in the immediate area, centered on coal mining and power plant construction at Colstrip just north of the Reservation, worsened conditions on the Reservation. These effects have been documented in studies performed in connection with regional coal leasing in the early 1980s, and are now better understood. Chapter 3, Part III of this report provides further explanation of how economic development in the region, if it occurs under conditions that isolate the Cheyenne from its benefits, actually has negative economic impacts on the Reservation.

Ignoring adverse economic impacts in instances like this one has human consequences, as well as economic costs that are not always obvious. In all communities, poverty is linked to increased crime, drug use, and family dysfunction. These negative effects will be amplified in small, close-knit, communities whose members and families have been subjected to physical, sexual, and mental abuse, as the Northern Cheyenne people endured in the early reservation period. The unfortunate effects of such experiences especially impact children and are passed down in families.

These are harsh realities; but as we will see the Tribe and the various social service agencies on the Reservation recognize them, and are dealing with them, and they should not be glossed over in baseline and impacts assessments of the Reservation and its people, either. Thus, in the last part of Chapter 3, we provide stark evidence of the human consequences of the Reservation's grinding poverty, in the form of increased mortality and morbidity and chemical dependency, among other indicators.

The Cheyenne people widely recognize poverty to be at the root of many of the physical, mental, and social ills that afflict the Cheyenne community. The convergence of poverty, drugs, and the persistent legacies of past practices and policies being noted here brings us to a second major theme of this report: namely, as compared with non-Indian populations in the region, the Northern Cheyenne constitute not just a distinct population, but also one that is uniquely vulnerable. In the context of present proposals for renewed energy development in the immediate vicinity of the Northern Cheyenne Reservation, there is an affirmative responsibility on the part of the federal government to assess, consider, and act to alleviate further preventable adverse impacts to the Reservation and its vulnerable population.

Northern Cheyenne Tribal Government. Chapter 4 below presents a description of the Northern Cheyenne Tribal government and the Tribe's fiscal resources. It should be noted at the outset, however, that prior to extended warfare with Euroamericans in the late nineteenth century, the Cheyenne had already developed an effective, sophisticated political and legal system. *The Cheyenne Way,* authored jointly by a legal scholar and an anthropologist (Llewellyn and Hoebel 1941), revealed the Cheyenne way of jurisprudence through a carefully documented series of case examples based on fieldwork done in the mid-1930s. While different from those of European traditions, Cheyenne ways of governance and dispute resolution nevertheless impressed Llewellyn and Hoebel as complex, subtle, and well-adapted to the Tribe's nomadic and seasonally dispersed existence. Their work has become a classic of anthropological legal studies. It dispelled the notion, widespread in the late nineteenth and early twentieth centuries, that aboriginal Native American peoples lacked law and government.

Traditional forms of Cheyenne governance, however, could not be maintained through decades of relentless warfare followed by dispersal of the Tribe, and then confinement on the Reservation under Bureau of Indian Affairs (BIA) rule. In 1936 the Tribe elected to organize itself under the Indian Reorganization Act, adopting a Constitution which provided for an elected Tribal Council, a Tribal President, and a Tribal court. 1996 amendments to the Tribal Constitution provide for a formal separation of powers between the Legislative, Executive and Judicial branches of Tribal government. Tribal government has since grown in size and complexity since 1936 to encompass over 30 executive agencies and departments and many boards and commissions help to oversee these agencies.

Despite these advances in Tribal self-government, the Reservation lacks a vibrant, self-sustaining economic base that would allow the growth of fully autonomous

Tribal government institutions. With no tax and minimal enterprise revenues to support the operations of Tribal government, the Northern Cheyenne Tribe and its people remain heavily dependent on a variety of federal programs. Because most of these funds and services are mandated for specific purposes, the Tribe finds itself with almost no discretionary resources. This leaves the Tribe extremely vulnerable to off-Reservation energy development because the Tribe lacks the resources to effectively participate in the complex administrative and legal processes that will ultimately shape that development. In recent years, the Tribe's discretionary funds have actually been declining as revenues from Tribal grazing and timber lands continue to dwindle.

Reservation Services, Programs and Facilities. Chapter 5 of this report addresses in considerable detail the public services, programs and facilities available to meet the special needs of the Reservation community. The study finds that many public services on the Reservation fall far short of the needs they serve and are inadequate in relation to those enjoyed by more wealthy off-Reservation communities.

The report finds the most severe public service deficits to be in the areas of housing, utilities and fire protection. The Reservation faces a severe housing shortage with more than 800 families needing new housing and fully two-thirds of the existing housing stock in substandard condition. Existing housing programs on the Reservation are barely able to prevent further deterioration in the housing situation let alone address these severe deficiencies.

Several Reservation communities lack access to reliable drinking water supplies, the sewer system in Lame Deer operates in violation of the Clean Water Act, and the Reservation's solid waste transfer stations have been allowed to become open dumps. The Tribe lacks the resources to fix these problems and must compete for limited sanitation funding with several other Reservations with equally serious deficiencies.

The Reservation's fire protection system is essentially unfunded. More than half of the fire hydrants in Lame Deer do not properly function and the Tribe lacks a formal spill contingency plan. Due to lack of funding, volunteer fire fighters have only the most basic training and operate with severely outdated equipment.

Law enforcement, transportation and social services are three other areas where public services are deficient. The Reservation is suffering from a crime epidemic with more than 5,000 arrests in the past year alone. The Reservation police force is underfunded and understaffed. There are times in which only one officer is on-duty for the entire Reservation. The Tribal Court lacks adequate facilities and the Tribe's detention center is chronically overcrowded. Existing law enforcement deficiencies have the potential to be exacerbated by jurisdictional gaps which threaten to make the Reservation a haven for non-Indian lawbreakers.

There is no public transportation on the Reservation. Poverty limits access to reliable private transportation. Although the Reservation's road network has recently

been improved, accident rates on Reservation highways remain much higher than on comparable off-Reservation highway segments. The Reservation lacks basic traffic safety laws or the means to enforce them. Again, the Reservation's traffic problems are made worse by irresponsible non-Indians who take advantage of the Reservation's lack of traffic law enforcement.

Social services on the Reservation are deficient in relation to the need engendered by very high rates of poverty. Tribal members are increasingly dropping off the welfare rolls due to onerous eligibility requirements and are being forced to rely on Tribal programs of last resort, such as commodities, emergency food vouchers and low-income energy assistance, to meet their basic physical needs. Child welfare workers operate in a crisis mode almost continuously and are unable to provide the comprehensive services needed to address the root causes of child abuse and neglect. Funding for drug and alcohol treatment is woefully inadequate to serve the needs of a Reservation in which chemical dependency is endemic. Participation in employment and job training programs is high, but waiting lists are long and available jobs scarce even for qualified applicants.

Education and health services are a bright spot in the otherwise gloomy assessment of Reservation services. On-Reservation schools have been upgraded in recent years and Reservation families have a relatively high degree of school choice with the presence of well-funded private and public schools just off the Reservation. The Reservation has its own Tribally controlled community college and a vibrant Head Start program. Nevertheless, student achievement is still low as measured by standardized tests and drop out rates remain unacceptably high.

The Reservation also benefits from a new Health Center which was constructed by the Indian Health Service in 1999. The new Health Center not only brought substantially improved to health care facilities to the Reservation but also resulted in large increases in funding for Tribal health programs. Notwithstanding these improvements, the Reservation still lacks needed inpatient facilities, a dialysis center and various forms of specialty care. The budget for off-Reservation contract care is inadequate to meet current needs.

Natural Resources. The natural resources of the Northern Cheyenne Reservation and adjacent lands and waters are described in Chapter 6. A major focus of the Chapter is on water, a precious resource in an arid region which averages only about 14 inches of rainfall per year. (Water is not only an important economic resource, as Chapter 7 of the report points out, springs and other water bodies are also an important cultural resources for the Tribe.) Chapter 6 discusses the Tribe's reserved water rights and characterizes the present and potential uses of water that could be affected by CBM and other energy development adjacent to the Reservation. The Chapter also contains data on water quality and information about the Tribe's water quality standards. In addition to water resources, Chapter 6 also discusses the

Reservation's Class I airshed, as well as the Reservation's important forest, rangeland, and fish and wildlife resources.

Cultural Resources. The final Chapter of the report provides a detailed inventory of Northern Cheyenne cultural resources. Building on the discussion in Chapter 2, this Chapter explains that "cultural resources" are not necessarily limited to specific historical or archeological sites, but also include natural resources that support ceremonial and subsistence uses, and landscapes needed to perform important rituals. These cultural resources can be found both on and off the Reservation and especially in the Tongue River valley, an area that was homesteaded by Tribal members in the 1880s and toward which many Cheyenne still feel an intense bond.

CHAPTER 2

AN OVERVIEW OF NORTHERN CHEYENNE CULTURE AND HISTORY

I. The Northern Cheyenne World View.

The Northern Cheyenne are the people of The Morning Star. They are the caretakers of the Sacred Buffalo Hat, a sacred covenant with *Maheo* (Creator) brought to the *Suhtio* people by one of their sacred medicine people *Ho'ev'nehsti* (Stands On The Earth) at *Toh'nihvoos* (Stone Hammer Mountain) near the Great Lakes in what is now known as the state of Minnesota. They are a kin people to the Southern Cheyenne of Oklahoma. The Southern Cheyenne are the caretakers of the Sacred Arrows, also a sacred covenant brought to the *Tse'tsehese'stahase* people by one of their sacred medicine people Sweet Medicine at Bear Butte in the Black Hills area of what is now known as the state of South Dakota. *Wohehiv* the Morning Star, is greeted as an ancient old man each morning by the Keepers of the Sacred Covenants. (J. Little Coyote, 3/3/02).

Cheyenne cosmology and worldview have been described by Powell (1969), Campbell (1986), Moore (1974, 1979, 1984, 1986), Deaver and Tallbull (1988), Grinnell (1972) and Hoebel (1960). However, the following description of the Cheyenne cosmology and worldview is unique in that it was written by Joe Little Coyote, a member of the Northern Cheyenne Tribe.

The cultural life of the Northern Cheyenne Tribe is holistic in nature, i.e., the elements of their economy, history, religion, language, sacred belongings, their health and medicine, education, livelihood, their allodial existence with its cultural imperatives in maintaining the environmental and cultural integrity of its land and water in particular, their customs and traditions, their music and arts cannot be separated from the rest of the elements that make up the culture. Although each particular element can be analyzed, all elements are interrelated and must be addressed in that context if the cultural concerns of the Northern Cheyenne Tribe are to be adequately addressed.

The Northern Cheyenne Reservation, near the frontier town of Ashland, in the state of Montana, was created by Executive Order in 1884, is the homeland of the Northern Cheyenne people. In spite of the Northern Cheyenne Tribe having allodial title to these lands, this homeland was won at great cost. Many of their ancestors were subjected to outright physical extermination and cultural genocide designed to wipe them off the face of the earth. This human holocaust had to be stopped due to a great outcry from the American public against these inhumane atrocities, and because these genocidal practices were becoming too much of a strain on the financial resources of the country. As an alternative, the federal government placed the Northern Cheyenne people into confinement status on the Tongue River Reservation in southeastern Montana Territory.

The Northern Cheyenne are an aboriginal people indigenous to the North American continent, specifically comprising a culture based on the integrated traditions, customs and beliefs of the *Tsi'sti'stas* and the *Suhtio*, who today constitute the Northern Cheyenne Nation.

> *Tsi'sti'stas* means: "like hearted people (Ruby Sooktis, 1984)," who were given birth as a nation at their sacred mountain "*Nowah'voos* (Bear Butte)," near Sturgis, SD., where they were given their Sacred Covenant.
>
> *Suhtio*, which is a shortened version of "*Issih'omih'tio* (Henry & Julia Little Coyote, 1958)" meaning: "people of the marsh waters that flow into the dark brushy country," who were given birth as a nation at their sacred mountain "*Toh'nih'voos* (Stone Hammer Mountain)," near the Great Lakes in Minnesota, where they were given the Sacred Buffalo Hat Covenant.

These two people – *Tsi'sti'stas* and *Suhtio* – are a kindred people having slightly dissimilar languages, beliefs and traditions and customs, but are now integrated in their religious ceremonial expressions and present way of life. The cultural standard of the *Tsi'sti'stas* is based on their Covenant the "Sacred Arrow Lodge," and the cultural standard of the *Suhtio* is based on their Covenant the "Sacred Buffalo Hat lodge." Both these Covenants are not unlike the "Ark of the Covenant" of the Hebrew people of the Old Testament in the Bible. Today, after a period of amalgamation, both these traditions became integrated into one cultural expression of the Northern Cheyenne Nation.

With these two Covenants the Cheyenne had power from Grandmother Earth to obtain their food, shelter and clothing as well as the power of defense against their enemies. In times when there was a threat to the nation, the buffalo shield was hung from the tipi poles for protective purposes. This was called: *Hova'noh'nistosti*. This cultural practice is still continued to this day. In addition, the sacred ceremonials associated with these Covenants contain instructions regarding their creation, origins, history, cosmology, their sacred language, traditions, customs, beliefs and values which reflect principles of love and respect for one another, not to be wasteful, not to be abusive toward life in general, not to marry into one's family or extended family, not to murder another Cheyenne, to be respectful toward one another and to share with one another, to respect and care for the children and elderly, not to steal from one another, and for the leadership to care for and protect the people first. Their system of sanctions regarding violations of these principles were rehabilitative rather than punitive, other than banishment for murder.

The Sacred Buffalo Hat Covenant is still with the Northern Cheyenne today and continues to provide a tangible reference of who they are as a people. To some extent the ways of this Covenant are evolving in carrying forward their original identity to give purpose and meaning to the younger generations for today's times and conditions. It is good and proper that the Northern Cheyenne people still live with their Covenant in the old time way to "preserve their identity as a nation of people**"** for future generations to come. In these sacred ways the ceremonial people believe that the Cheyenne people will never disappear from these lands, with the assurance that the Tribe will in perpetuity

remain an aboriginal sovereign Northern Cheyenne Nation indigenous to the North American continent.

And so today, this Covenant is still very much with the Northern Cheyenne people and continues to be cared for in the traditional way of the tipi lodge of ancient times. The Northern Cheyenne are situated in the southeastern part of Montana, specifically in the Tongue River Valley region. Each and every morning the Keeper of the Sacred Buffalo Hat Covenant takes a stick of wood and knocks on one of the tipi door poles to signal to the people the beginning of a new day. He enters the tipi, a fire of dry cottonwood is made and a sacred pipe and tobacco are used to make prayer offerings for the well being of the people. This occurs every morning when the morning star appears and again in the evening as the evening star appears. In beginning the new day in prayer, in metaphysically relating to the morning star, he greets this star as an ancient old man, calling him grandfather (*Heh'nuhm'shim*)!

Today, in continuing traditional cultural protocol, many Cheyenne people when preparing to go on an extended trip outside of their homelands, stop by the Sacred Buffalo Hat Keeper's home where the Covenant is kept and cared for, bringing gifts of tobacco and dry goods. They inform him that they are going to be gone for a period of time. In this way the Keeper will keep them in mind in his prayers – asking for a safe trip and return. In addition, people go the Keeper for prayers for their special needs, e.g., health and well being of the family. Special protective prayer ceremonies are held for young men and women who are leaving to serve in the Armed Forces of the United States, and are given special protective amulets to wear while in service. In addition, these protocols also continue to be used to provide a "cultural sanction" for positions taken by Tribal leaders having to do with the Tribe as a whole. It is the belief that if these protocols are used, whatever direction these leaders hold out for the future of the Northern Cheyenne Tribe will be beneficially effective for all the people.

Although the contemporary Cheyenne understand scientific theories of the elemental makeup of the universe and the earth as being inanimate, this in no way diminishes their continuing metaphysical practices which relate to the physical elements of the universe as being animate with spiritual qualities. The basis of this Cheyenne understanding is in their belief systems as expressed in their sacred ways, which maintains a spiritual connection to *Maheo* as the sacred creative essences that caused the creation of the universe and of life itself. They believe that the white man has become psychically disassociated from these original understandings of humankind. Nothing seems to be sacred to the white man anymore in that his spiritual/metaphysical understanding is now grounded in temporal considerations of his physical environment with no real sense of care to maintain its life essences to maintain his own existence, and that this comes at a time when the pollution caused by the unwise use of industrial technology is beginning to have a noticeable destructive effect on the natural essences which sustain all life.

The Cheyenne also understand that if they are not diligent in exercising due care in modifying these elemental arrangements of creation there is a real potential for upsetting the elemental balances within the environmental systems in which these life elements are sustained. In these regards, the cultural practices of the Cheyenne are

geared to use only that which is needed to provide basic sustenance for their health and general well being, leaving the rest to replenish Grandmother Earth in providing sustenance to all other life beings in a manner that does not upset the environmental balances which sustain all life.

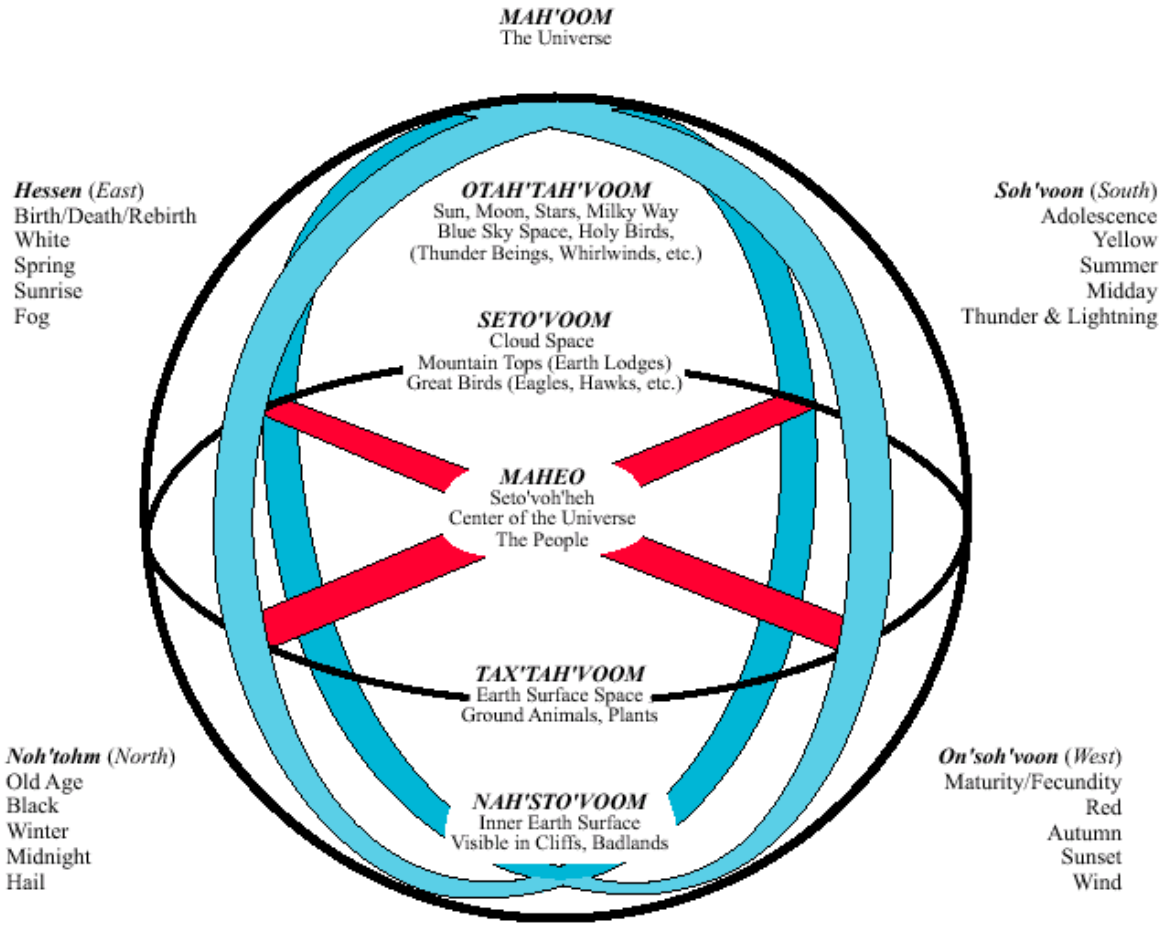
In part, the medicine ways of the Cheyenne were adapted to be responsive to the harsh realities of living a subsistence way of life in following the great buffalo herds and to the dangers associated with it as they moved through territories inhabited by other peoples. In being mindfully attuned to the natural rhythms of the universe in the movement of star formations, through their sacred ways they were able to use the morning star as it appeared to their advantage in a manner of providing for their well being. So, it was for security reasons and to their advantage to be up and moving early. The Cheyenne have a saying that: "we are just moving through, don't tarry long."

Today, in these prayer offerings, the leaders of the United States of America are included (as well as other nations of the world) as it is acknowledged that not only is the destiny of the Northern Cheyenne People caught up in the destiny of the United States, but also that the health of Grandmother Earth is dependent on understanding and peace among all the nations of the world. (Austin Two Moon, 1971, Sacred Arrow Renewal Ceremony, along the Tongue River near the town of Ashland, MT).

In spiritually relating to the elements of creation, sacred tobacco is offered to: *Maheo*, the sacred essence causing the creation of life itself, to continue to provide for the care required for the well being of all life everywhere; to the Sun as their Grandfather; to the Earth as their Grandmother; to the Moon as their Mother; to the Stars as their Brothers and Sisters; to the four cardinal directions as the Sacred Spirit Helpers who watch over their way of life; to all other creatures (plants, insects and animals) which serve as the food and medicine of their Grandmother for their health and sustenance; to the winged and the water beings, e.g., the rainbow colors of the shells of fish that reflect the beauty of all the creation of *Maheo*; and to the watery vapor of the Creator's breath of life which is the essence and sustainer of all life. The Cheyenne can't believe that anyone would allow the destruction of the very essence that keeps them and all of life alive, by not being mindful of what they are doing to harm the environment. In conceptual terms in relating to these modern times, all this can be translated into what is contemporarily called the "environment/eco-system." Since ancient times in the growing awareness of the sacred creation, the Cheyenne people were told by their prophets of old, the sacred ancient ones, the grandfathers and grandmothers, never to abuse it lest they perish from the earth.

The Cheyenne believe that their physical and spiritual beings were created from these lands when they were given life by the Creator *Maheo's* breath of life. This belief forms the basis of their cosmology and identity as an indigenous people of these North American earth lands.

The Cheyenne have a conceptual framework with which to understand their world outlook. The terms for the four vertical levels of the Cheyenne world view are: (1) the universe is *Mah"oom*," and (2) the blue sky space is *Otah'tah'v"oom*," and (3) the middle sky space containing clouds of water vapor is *Setov"oom*," and (4) the surface of the earth is *Tax'ta'v"oom*," and (5) the inner earth below is *Nah'sto'v"oom*." The "*oom*" of each of these levels refers to the "watery vapor of the Creator's breath of life" in creating the universe and all life. See Figure 2-1.



The renewable, cyclic universe, Mah'oom, is governed by spiritual essence in constant interaction. In adapting to various environmants, the Cheyenne have developed sacred, spiritual ways based on the infinite rebirth of the universe. The spiritual earth symbols of the earth renewal ceremonies are formed like the spiral galaxies of the universe. In these ceremonies, the re-enactment of the creation of the universe by the human male and female includes all life beings and elements in the universe, thereby making it whole and in balance.

Diagram by Winfield Coleman, in collaboration with
Joe Little Coyote Sr., Northern Cheyenne

The Cheyenne are oriented to the eastern direction from which the sun rises, which is why they face the camp lodges of their nation to the east, and also face east when engaged in prayer. This is keeping in balance with the natural cosmological rhythms of the universe and the earth. To have a complete understanding of this horizontal outlook it can only be fully understood in the context of the Cheyenne's cyclic view of their universe in which the sun, beginning at its zenith in the Cheyenne new year during the spring season, goes in a circle from left to right ending in the dead of winter and then moving back to its zenith to begin yet another cycle:

(1) The Eastern direction from which the sun (*Vo'ne'veshe*) rises is the direction from which they believe life comes. It is said a child about to be born is journeying from the east to be with the people. This direction is "*Hessen*" represented by "*Hessen'ta'he*" the animated name of this eastern direction. Its power essence is "fog (*Mah'ehn'o*: the Turtle in reference to its slow movement)" that has the power of blindness to hide the people from danger. Its color is white.

(2) The Southern direction is "S*oh'voon*" to which the new life (child) grows to become an adolescent and is represented by "S*oh'voon'tahe*," the animated name of this southern direction. Its power is thunder (*Noh'no'mah*: in reference to its loud noise in shaking the earth to bring things to renewed life and new growth) and lightning (*Ho'e'tah*) that has the power of growth and destruction. Its color is yellow.

(3) The Western direction is "*Onx'Soh'voon*," to which the life grows to adulthood, and is represented by "*On'soh'voon'tahe*," the animated name of this western direction. Its power is the "Wind (*Ha'hash'e*)" and is at times referred to by the old ones as "*Max'ha'noh'vih'tan* (the big trickster)." Its color is red, representing the ripeness of natural fruit and the fullness of growth to participate in the procreation of the *Maheo*.

(4) The Northern direction is "*Noh'tohm*," to which a person grows old in going back to the Creator from whence they came, and is represented by "*Noh'tah'moh'ta*," the animated name for this northern direction. Its power is the "cold elements (*Tsi'tohn*)" with power to cull the infirm and to refresh life for the spring season to come. Its color is black which is the symbol of victory in having made it through the full cycle of life. The medicine people sometimes refer to *Noh'tah'moh'ta* as "*Ho'he'maha'kess'o*: old man winter," or "*Voh'kim*: cold winter cloud person" in their ceremonial prayers during the course of the winter.

Through the medium of their sacred spiritual ways in connection with Grandmother Earth, the Cheyenne people believe they can harness the creative power essences of the universe to benefit their physical existence on this earth. For instance, United States Army accounts of battles with the American Indian are replete with events where they couldn't kill a warrior, such as *Sauhsti* (Bat) as he was known to his people, and with great respect was known to the white soldiers as "Roman Nose." He was named after the bat because he seemed to fly like one in jumping from place to place

while fighting on the battlefield. After putting up a strong valiant fight for his people, he finally fell on the battlefield when he didn't have adequate time to properly prepare himself through the sacred ceremony that gave him the power of protection from harm. Also, the people were protected during the trek to their northern homelands from Oklahoma Territory, in using the power essences of *Hessen'ta'he* for their protection. These protective power essences are called: *Hoa'ho'oh'doh'histosti*. The medicine people believe the Cheyenne people are the only ones blessed with these sacred protective ways. Although these sacred ways didn't win them the war, they sustained them well enough to reach and regain their northern homelands that they are determined to keep forever (Grover Wolf Voice, age 81, 1972). And, as long as they continue in their sacred ways they will continue to sustain them in their own homelands as a nation of Northern Cheyenne people well into the future times.

It has been told by one of the old people (Henry Little Coyote, 1958, age 83, Keeper of the Sacred Buffalo Hat Covenant) that the Great Lakes Region is the center of the universe (*Seto'voh'heh*) because that is the place where all the above described powers work at once, i.e., a person can see and hear thunder and lightning, wind, hail and fog during the course of severe storms that hit these great bodies of water.

Cheyenne territory naturally encompassed the migration pattern of the great buffalo herds. They followed these herds from the Great Lakes and Missouri River regions in the early spring, then to the south and west, then northward along the Rocky Mountains in the late spring and early summer, along the Big Horns and up into Canada during the course of the summer season, and across Canada eastward in the fall season and back down into the Great Lakes and Missouri River regions for their wintering grounds. It is said that these buffalo herds in their migration pattern, followed the seasonal growth of their food supply. Although some anthropologists call this a "buffalo culture," given the changes in their way of making their livelihood, which also included being fisherman, farmers and hunters of the buffalo, it would be more appropriate to call it a "renewable cyclic culture based on the infinite rebirth of the universe and the earth lands," i.e., in the making of their earth symbols upon which they make their altars, the Cheyenne are aware that the universe is infinite in its cyclic nature of birth, death and rebirth. Cheyenne cosmology can only be fully understood in the context of its cyclic nature – thereby making it whole and in balance.

For many millennia in which their sacred spiritual ways evolved from the North American earth lands, the Cheyenne in their sacred construction of symbols representing their universe knew that Grandmother Earth was spherical. In fact, the medicine people conducting ceremonies use certain basic elements from the earth rolled into a sphere (ball) in the reenactment of the creation of the human male and female, and call on all the life beings and elements of the universe to be included in these world renewal ceremonies. The earth symbols they use for their renewal ceremonies can be found in the star formations of the universe.

The Cheyenne also tell of regions where they once lived, in following the great buffalo herds and in their exploratory travels throughout the North American continent:

- Their Northern Homelands in Northeast Canada between the Hudson Bay and James Bay Regions they called: *Noh'tom'his'toah'o'o'mihna* (northern mountainous regions of our origins).

- The Great Lakes region they called: *Sti'maxih'mih'sih'e'voo'ev* (the place where the great waters appear onto the land in a cloudy mist).

- One of the most recent homeland regions of the *Suhtio*, which the Cheyenne refer to themselves as being from, they called: *Issih'oom'mih'tah* (where the marsh waters flow into the dark brushy country).

- The Expanding Sand Hills Country near the Great Lakes they called: *Nih'o'mah'e'tanihn* (the ceremonial term the *Tsi'sti'stas* (Cheyenne proper) refer to themselves as is *Nih'o'mah'e'taneo*: Expanding Sand Hill People). It was a common practice in those days for different bands of our people to refer to themselves in being from a certain place and naming themselves after that place.

- The Mississippi River Region they called: *Maxea'yoh'he'e* (Big River country).

- The Missouri River Region they called: *E'o'mih'tah* (dark brushy country of the Greasy River in reference to the foamy substance floating in the waters).

- The Great Plains Regions of the west they called: *Sti'max'e'toh'toah'ev*.

- The Black Hills Country they called: *Mok'e'tahvo'hona*h.

- The Nebraska and Colorado Territories they called: *Nohm'hastoh'sti'max'to'toah'ev* (southern great plains).

- The Rocky Mountain Region which included the Big Horn Mountains and the Glacier Mountain Range going into Canada they called: *Ho'hoe'nah'tsi'om'mohsti*.

- The Kansas and Oklahoma Territories they called: *Ho'e'sti'xah'hote* (the place of the hot earth).

- The Texas Territory they called: *To'hoa'no'e'hoeva* (the parched place with thick earth cracks).

- The Northwest Canadian Region they called: *Sti'enoh'mah'eyah* or M*ah'oom'sti'enoh'ma'eyah* (where the ice sheet ends).

- Lake De Smet near the town of Buffalo, Wyoming, they called: *Max'e'ne'hanev* (where the *ma'steheo'nih'taneo*: Kiowa/Apache people moved into the great body of

water).

- The Tongue River, Powder River and Otter Creek regions they call: *Ho'ho'nah'shi'e* (shaley rock earth country).

Although at times in their exploratory wanderings throughout the North American Continent the Cheyenne lived a sedentary way of life in the eastern sections of the country and planted corn and squash, to a greater extent they followed the great buffalo herds in their migration pattern. In so doing, they always stayed close to the many water ways which provided them shelter from the cold elements, water, wood and grass for their horses and good hunting. In other words, during their wanderings throughout the vast territory of the North American continent, the Cheyenne at times evolved different life styles in adapting to different lands and climates they encountered.

The Tribe didn't live or move together as one group, but rather in Bands. Each Band, based on the extended family systems, had its own names for it, which was different from the main body and the other Bands, which numbered approximately ten. The only time they came together as one Tribe was for Tribal level ceremonies. Throughout the many millennia the Cheyenne came to know that being flexible and adaptive to the differing lands they encountered empowered them to continue to survive as a people. And so, they were naturally averse to anything that threatened this method of adaptation in living in harmony with their natural environment as expressed in the living creative spirit of the universe. Given that they were once a self-sufficient people, after their defeat they have yet to be given adequate opportunity to adapt to present times and conditions to attain a self-determined independent livelihood.

II. Northern Cheyenne History.

A. The Early Period.

According to academic historians, the Cheyenne (*Tse-tsehese-stahase*) originated in the Great Lakes region. They began moving from Ontario and the headwaters of the Mississippi River in northern Minnesota, southwest towards the Dakotas during the early 1700s (Weist, 1977:14-16). There they became farmers who lived in major river valleys and grew corn, beans and squash as their staple crops. The Northern Cheyenne themselves tell a somewhat different story which Joe Little Coyote recounts below.

Anthropologists have theorized from carbon dating that the Northern American continent was first peopled through the Bering Straits land bridge about 30,000 years ago. There are also some speculations by these same scientists that the North and South American continents may have also been peopled by ancient seafaring peoples long before that. In any event, our people have oral traditions that tell of a great flood; fire coming out of hills; long-nosed beasts (*Toh'seh'seheyoh/Mastodon?*); the great humming sound of large buffalo herds moving across the plains as far as the eye could see; prior to the horse, the swiftness and great endurance of young men and women that could run alongside the great buffalo herds in chasing them into pounds or over cliffs; stories of white men living among them (could they have been Vikings left behind

that were absorbed into the Tribe?); of great ice sheets (12,000 years ago?); of other human species quite unlike them (the old people telling Anthropologist George Dorsey of hairy people); their children playing on the edge of the forest with the offspring of large, hairy, human-like creatures; the *mihn'e* (large horned serpent like creatures that live near springs and rivers); the disappearance and reappearance of the moon's pet star (*Tah'esshe'his'toh'steo*); and other stories too numerous to mention here.

Western anthropologists, linguistic genealogists and ethnologists identify our Tribe as belonging to the Algonquin linguistic stock of aboriginal peoples who inhabited the northeastern regions of what is now Canada. The old people called these regions the northern homelands "*Notum'histah'o'o'mih'nah*," in reference to the region where the Cheyenne people broke off with the main body of other Algonquin speaking peoples they were once a part thereof. In this respect one could say that was where they came from, and where they came from prior to that is lost in the primeval mists of time, and is left to the speculations of archeologists and anthropologists. It is said that in these early times all the different tribes of people spoke and understood each other's language. During the 1400s and 1500s anthropologists speculate that our ancestors moved down into the western parts of the Great Lakes Region, and southward into the Mississippi River country (*Maxeh'yoh'he'e*: Big River), on to the Missouri River country and on to the Black Hills country, etc. They report that around the 1600s their livelihood mainly consisted of being planters of corn and squash, being fisherman, natural fruit and other natural food gatherers, and hunters of small game.

The Cheyenne people tell of a legend of how they obtained their first sacred foods that consisted of meat, corn, natural fruits and water. These foods, which are prepared in an sacred ceremonial way, are considered healing medicine and are still traditionally prepared and used in their ceremonials to this very day. Prior to partaking of these foods, a small portion is given back to Grandmother Earth to ensure there will be plenty for future times ahead (this is called: *e'sti'nih'nistostil*). Throughout the millennia the Cheyenne identity evolved through an adaptation process to differing land conditions which required new methods of making a livelihood.

Beyond the 1400s and 1500s, these western scientists and ethnologists can only speculate about the origins and pre-historic culture(s) of the Cheyenne. In these regards, more accurate information about the pre-historic times of the Cheyenne can only be found in their oral traditions passed down within their familial institutions. These oral traditions tell of times prior to the 1600s living in the dark brushy country in the Great Lakes region. Deep in the dark forests medicine people would visit other medicine people of other tribal peoples. In addition to teaching each other about their ways and beliefs, they learned about the white man (including the Black Robes) from other tribal peoples that either had prior knowledge of him and his strange ways, and of his steadily coming inland disrupting the tranquility and balance of things that had stood for a long, long time. This new knowledge, in which the white man and his ways was totally alien to them, was accounted for and found explanation in the psychic sphere of their mythology. Over the many millennia, having highly developed psychic abilities to see into the future, in knowing then that the ways of the white man were to be disruptive to their environment and culture, the Cheyenne were able to extrapolate how this was to affect them in the future. Pursuant to this, in knowingly anticipating these disruptive

effects, the Cheyenne began moving in a westward direction to avoid these anticipated disruptive influences. These disruptive influences were the commerce and attendant philosophical intrusions and expansions of the white man.

Beginning about 1600 to avoid contacts with these encroachments of European colonists, the *Tsi'sti'stas* moved in a westward direction from the Great Lakes region to the Missouri River region. In that region, some time around 1610-1620, while out hunting during the winter season, a group of *Tsi'sti'stas* warrior societies suddenly met up with a group of *Suhtio* who were also out hunting. They each thought the other were from an enemy Tribe. While preparing to fight they shouted orders to their warriors and discovered to their great surprise they could understand one another. They both stood down in their preparations to fight and called out to one another inquiring about each other. Finally, each group sent emissaries out to meet and told each other about their Covenants and that they would go back and report to their respective camps on each side of the Missouri River. After a time the Keeper of the Sacred Arrow Covenant sent a formal invitation for a visit to the Keeper of the Sacred Buffalo Hat Covenant. Upon arriving in the early morning with a contingent of warrior societies and their extended families, the Keeper of the Sacred Buffalo was told to camp to the north of the Keeper of the Sacred Arrows, and that a tipi would be erected at the center of the camp where they would formally meet.

After visiting for about one moon's time, in which their respective people's visited each other across the iced-over river, and learned that they had very similar beliefs, traditions and languages, a bond was formed to be mindful of their kinship similarities to one another, no matter where they might be. Before sun light, as the *Suhtio* Keeper prepared to move back across the river, they discovered that the ice had broken and the dangerous ice floes prevented them from moving back across. After a time, the *Tsi'sti'stas* prepared to move on, as they knew the buffalo herds would move out from the water regions to follow their migration pattern. The *Suhtio* Keeper, knowing that it was dangerous without the main body of his people, moved off under the protection of the *Tsi'sti'stas* hoping that one day they would find the rest of their people. It is speculated that the main body of *Suhtio* moved into what is today called Canada, never to be heard from again. After a time of getting to know one another and in integrating their beliefs, traditions and customs into one cultural expression, and being provided a place in the northwest camp circle of the *Tsi'sti'stas*, the *Tsi'sti'stas* and the *Suhtio* Keeper's people became one Cheyenne Nation.

From accounts of western ethnologists spanning the time around 1640 to around the 1830s, we know that the Cheyenne engaged in commerce with Europeans as the Hudson's Bay Company and other trading companies began to trade in fur pelts in surrounding regions. The Cheyenne were entrepreneurs in their own right, trading outright or brokering deals between these companies and other Tribes. They were shrewd traders in bartering to meet whatever their needs were at that time, and in meeting other friendly peoples they exchanged ideas and other kinds of useful information.

About 1804, the Lewis and Clark expedition also made contact with the Cheyenne people, telling them that there were great numbers of white people coming

into the country and nothing could stop them. They were given gifts of tobacco and dry goods and were also told about the great and wonderful blessings the white man's civilization would bring to this country. (Henry Little Coyote, 1959).

On July 4, 1825, while living in the Missouri River and Black Hills regions, a small group of Cheyenne, not representative of the entire Cheyenne Nation, were approached by the Federal government and induced to sign a "friendship treaty" which provided for recognition of the sovereignty of the United States and its right to regulate trade with them. The government considered it legal and binding to the entire Tribe. The Cheyenne did not realize that this treaty meant giving power to the United States to interfere in their future affairs.

Sometime in the 1830s the Cheyenne Nation, because of personal preferences, began splitting into northern and southern Branches. The Southern Cheyenne preferring the amenities of trading and living in the southern regions, primarily encompassing the southern part of Colorado Territory. The Northern Cheyenne preferred living close to their Lakota relatives and the mild climate of their northern homelands encompassing the Black Hills, the Powder River, the Yellowstone River and the Tongue River Regions in the Dakota and Montana Territories.

B. Conflict and War.

In the 1800s an increasing number of Euroamerican settlers and gold seekers moved into southeast Montana and other part of the Great Plains region. The settlers brought diseases that ravaged large numbers of Indian people and whiskey which undermined relations between Tribal leaders and warriors. European cattle began to disrupt the grazing and migration patterns of the buffalo. Especially on the Central and Southern plains, war began to break out due to these commercial encroachments which did not respect the territorial interests of the Cheyenne and other Indian people.

In the late 1840s, the United States government established military outposts and an Indian agency in the Upper Platte River valley. In an attempt to control the relationships among the various Plains tribes and between the white settlers and the Indians, the American government convened a treaty council at Fort Laramie in 1851 which included the nations of the Sioux, the Cheyenne, the Arapaho, the Crow and Shoshone. The Fort Laramie Treaty of 1851 assigned the Cheyenne and Arapaho to lands south of the North Platte River and north of the Arkansas River, from their headwaters eastward to the forks of the Platte (in present day Wyoming, Nebraska, Colorado and Kansas). The area north of the North Platte River was assigned to the Sioux. However, there were both Northern Cheyenne and Northern Arapaho bands living in the Sioux territory. The government hoped that by assigning territories to the Cheyenne and the Arapaho, all out warfare could be averted. However, the Cheyenne and Arapaho were allowed to continue to live and hunt north of the Platte with the Sioux (Weist, 1977). The informal geographic division between the Northern and Southern Cheyenne bands began to take on political significance with this treaty action. The bands living on the Northern and Central plains, north of the South Platte River, became known as the Northern Cheyenne and Northern Arapaho, while those living between the South Platte and Arkansas rivers became known as the Southern Cheyenne and

Southern Arapaho.

The Tribal territories assigned by the 1851 treaty were essentially ignored. From the 1850s onward, the Cheyenne and other Plains tribes came into increasing conflict with Euroamerican settlers which led to escalating violence. In 1861, the Southern Cheyenne and Southern Arapaho entered into the Treaty of Fort Wise of 1861, which set aside a small reservation in southeastern Colorado Territory for the Southern Cheyenne and Arapaho where the Federal government promised them that they would not be attacked. The government had tried to get the Northern Cheyenne and Arapaho to recognize the government's authority and settle onto this reservation, but they refused. They preferred not to abandon their traditional hunting grounds on the Central Plains, and continued their raids along the North Platte, resisting the commercial and military intrusions into what they considered to be their territories (Weist, 1977: 49, 53).

During the Civil War, United States government troops were sent south from the Plains and the settlers were allowed to form volunteer militias. The Colorado Volunteer Militia led by Colonel John M. Chivington, a Methodist minister, waged a campaign of extermination against the Cheyenne which culminated in the 1864 Sand Creek Massacre, in which a peaceful Cheyenne village led by Chief Black Kettle was attacked and 137 Cheyenne were massacred, mostly old people, women and children. Nellie White Frog, who was an adopted German girl, told how the soldiers would throw live babies into the burning fires of their lodges. Chief Black Kettle had been given an American flag and was instructed to raise the flag in the event there was danger from U.S. soldiers. He attempted to raise the flag along with a white flag when he saw the soldiers of the Colorado Volunteers. After the massacre, Colonel Chivington and his troops paraded into the town of Denver, proudly displaying and waving the private parts of the Cheyenne who were massacred at Sand Creek. The Sand Creek Massacre led to a period of all-out warfare between the United States government and the Northern Cheyenne and other Plains tribes.

In October 1865, the Southern Cheyenne and Southern Arapaho signed the treaty of the Little Arkansas, by which they obtained new reservation lands in south-central Kansas and north-central Oklahoma Territories. In 1869, President Grant signed an executive order establishing a permanent reservation for them in western Oklahoma.

In 1865, the Federal government once again tried to end the hostilities between the United States and the Northern Cheyenne and Sioux nations by convening a treaty council at Fort Laramie. Even though the Northern Cheyenne initially signed the treaty, final negotiations broke down when it was learned that during the process of these negotiations, United States military forces were being sent into the Powder River country to build a series of forts to protect immigrants along the Bozeman Trail, in the continuing commercial encroachments of white settlers throughout Northern Cheyenne territory. And so, hostilities continued.

These hostilities led to the Fetterman Fight of December 21, 1866, in which an eighty-one man contingent of United States troops under Captain William J. Fetterman from Fort Kearny, sent out to aid a wood train, and were wiped out by the Northern

Cheyenne and Sioux under the leadership of Two Moon, Little Wolf, Crazy Horse and Buffalo Hump. Prior to this, Fetterman had bragged that with eighty men he could ride through the entire Sioux nation.

Finally, in 1868, the Federal government attempted to end hostilities by convening yet another treaty council at Fort Laramie. In the Fort Laramie Treaty of 1868, the Federal government acceded to the demands of the Northern Cheyenne, Northern Arapaho and Sioux nations, and established the Great Sioux Reservation in South Dakota. An "unceded Indian Territory" was provided for in this treaty, encompassing the lands north of the North Platte River, from east of the summit of the Bighorn Mountains eastward to the Missouri River, to be held in common by all the Tribes. The United States also pledged to abandon its forts guarding the Bozeman Trail.

The Fort Laramie Treaty of 1868 failed to bring a lasting peace. Hostilities continued as a result of the encroachments by gold prospectors into territories set aside for the Tribes by the Treaty. The Federal government tried to purchase the Black Hills after gold was found. The Tribes refused. The government also attempted to buy the mineral rights, but this was also refused and hostilities continued. Government officials felt the only way to resolve this problem was to force the Tribes living and hunting in their traditional territories of the Powder River, the Tongue River and Yellowstone River countries onto the Sioux reservation and keep them contained there.

In 1874 the U.S. Army led by General George Armstrong Custer invaded the Paha Sapa, the Black Hills, sacred to both the Sioux and the Cheyenne. This land had been guaranteed as Indian land in the Fort Laramie Treaty of 1868. The gold miners followed the army and soon were coming and going at will. The Indians retaliated. In August of 1875, a government commission, through promises and threats, got the Chiefs of the Great Sioux reservation to surrender the Black Hills and other lands, comprising approximately one-third of the reservation, and all the unceded territory in the Powder River country. In December of 1875, then President Grant ordered that all Indians must move onto reservations by January of 1876.

On March 17, 1876, General George Crook directed cavalry under the command of Colonel J. J. Reynolds to attack the Cheyenne camp led by Two Moons. Two Moons's camp was a large village containing 105 Cheyenne lodges, Minneconjous, and Oglalas located at Thompson Creek near present day Moorehead, Montana. The Oglalas camped with Two Moons were followers of the headman He Dog, a close associate of war chief Crazy Horse. The Indian survivors of Reynolds's attack moved up the Powder River to join Crazy Horse's camp. On March 27, 1876, Crazy Horse's people took in the refugees from the Reynolds attack. They gave them all the supplies and clothes they could spare but they did not have enough to go around. Consequently, in April, Crazy Horse moved his people north to the Chalk Buttes area where Sitting Bull's band was camped on Blue Earth Creek (Moeller and Moeller, 1987:90; Gray, 1976:323-325).

Warrior ceremonies were held, sweat lodges were set up for purifying ceremonies and Crazy Horse was made war chief for life. Word spread of the war

council and many more Oglala and Cheyenne along with Minneconjous, Hunkpapa, Sans Arc, Santee, Brule and Blackfoot Sioux came to join the camp. The Cheyenne warrior Wooden Leg also reports returning to this area after the Sioux and Cheyenne success at the Battle of the Little Bighorn (Marquis, 1931).

Eventually this led to the Battle of the Rosebud on June 16, 1876, where the Cheyenne woman warrior "White Buffalo Calf Woman" saved her brother. On June 25, 1876, the Crow, Cheyenne, Arapaho and Sioux all battled at Little Bighorn. The Crow were allied with Custer while the Sioux, Cheyenne and Arapaho were allied against the United States Army and fighting to avoid placement on reservations. In the end, Custer and his entire contingent of 225 men of the United States Seventh Calvary were wiped out by the combined Lakota Sioux, Cheyenne and Arapaho. Prior to this, General Custer visited the Cheyenne camped along the Washita River in Colorado Territory, talking to them about need for peaceful relations. He was invited into the Sacred Arrow lodge to smoke the pipe with the Cheyenne. After smoking the pipe, he was warned by the Keeper Stone Forehead not to bother the Cheyenne anymore, or he would end up as the ashes that were being emptied on the heel of his boot. General Custer promised that he would do everything possible to bring peace to the Cheyenne.

In January of 1877, a group of Northern Cheyenne led by Two Moons, and a group of Oglalas led by Crazy Horse, fought a detachment of the Fifth Infantry, commanded by Colonel Nelson A. Miles (*Noah'koh'sti'nih'heh'nah*: Bear Coat Miles), in the valley of the Tongue River. The Battle of the Tongue River, also known as the Battle of the Wolf Mountains or Belly Butte Battle, was fought on the east bank of the Tongue River, just south of the mouth of Hanging Women Creek, 18 miles northeast of the Tongue River Dam. A single rock cairn marks the location where Big Crow, the only Cheyenne killed in the battle, died (Stands In Timber and Liberty, 1972:22n). Hostilities continued until the surrender of Two Moons to General Miles at Fort Keogh at the confluence of the Tongue River and Yellowstone rivers in April of 1877.

The losses suffered by Two Moons and his band at the Battle of Tongue River forced the last off-reservation band of Cheyenne's to move to Fort Keogh in April, 1877 (Weist, 1977:76). The Northern Cheyenne at this time had split into four groups: Coal Bear and his people went to their Arapaho relatives in Wyoming, Little Chief and his people went to Oklahoma to their relatives, Chiefs Dull Knife and Little Wolf and their people went to the Great Sioux reservation in South Dakota to their relatives, and Two Moons and his people went to Fort Keogh to serve as scouts for the U.S Army. Two Moons and his warriors later returned south to their village at the mouth of Deer Creek on the Tongue River (Powell, 1969:180).

In 1877, a group of 972 Northern Cheyenne under the leadership of Chiefs Dull Knife (*Vo'he'hiv*: Morning Star) and Little Wolf were taken to Oklahoma to live with the Southern Cheyenne. In 1878, finding the hot and humid climate to be inhospitable, and suffering from disease, they decided to go home to their northern homelands in the Tongue River Valley region, where they knew the environment was more healthy for them. After their request to the government to be allowed to return north was rejected, about 300 Northern Cheyenne under the leadership of Dull Knife and Little Wolf, defied the government and escaped to journey north, knowing full well that they would be

attacked and possibly wiped out by the United States soldiers. They walked over two thousand miles home in the freezing cold, being hunted and harassed by at least two divisions of soldiers along the way. This was their trail of tears, but they were determined to go home, rather than die in this hot and humid climate without at least trying to make some effort to get back to their northern homelands.

In their trek home, they relied on their sacred cultural ways to sustain them, with an old medicine woman by the name of Northern Woman: *Notah'mih'heh*, divining the safe directions in their trek home. By using sacred ceremonies, she told the people what to do, (such as, lying on their backs in the face of tornadoes hitting them), shielded and hid them with the powers of *Hessen'ta'he* in which soldiers thought they were small herds of buffalo when they came close to finding them, and showed which directions were safe to go when they were faced with other obstacles. (Woodrise, 1972).

In northwestern Nebraska, the Cheyenne split into two groups. Chief Dull Knife's band decided to try and reach their Lakota relatives at the Red Cloud Agency on the Great Sioux reservation. Chief Little Wolf's band decided to continue on home to the Tongue River homelands. On October 23, 1878, Chief Dull Knife and his band were found by soldiers from Fort Robinson and surrendered. The government decided to send them back to Oklahoma under armed escort. Upon their refusal they were confined without food or water. On January 9, 1879, deciding it was better to die at Fort Robinson rather being sent back south, they broke out and were slaughtered in the snow by the soldiers. Out of the 149 that were imprisoned at the Fort, 61 were killed. Many of the survivors were wounded. The survivors were sent to the Pine Ridge Agency and were allowed to stay with their Lakota relatives.

In early 1879, the Northern Cheyenne were divided into four groups. Those under Little Wolf were at Fort Keogh in Montana; those under Dull Knife were at Pine Ridge; another group remained in Oklahoma under Little Chief and Wild Hog; and some were living in Wyoming with the Northern Arapaho. Shortly afterwards, in January 1881, with the intercession of General Nelson A. Miles, all of the Northern Cheyenne were sent to Fort Keogh and were eventually allowed to move south and take homesteads near the Tongue River and on Rosebud and Muddy Creeks under the Indian Homestead Act of 1875. The Northern Cheyenne were finally back together in their Tongue River Valley and Otter Creek homelands. There they continued to live their traditional culture and began to develop a new way of making a livelihood for themselves based on the western agricultural industry of farming and ranching.

After disputes arose between the Northern Cheyenne and white ranchers who had settled in the area, the Commissioner of Indian Affairs ordered a special investigation in 1883. This investigation led to a recommendation that the Northern Cheyenne be permitted to remain where they were and a reservation established. (Feeney, 1986:3-6).

As Joe Little Coyote recounts:

> Around 1878, while Chief Two Moon's people were serving as scouts for the U.S. Military at Fort Keogh (near the present town of Miles city, Montana), pursuant to the Indian Homestead Act of 1875, which afforded Indian people benefits similar to those of the Homestead Act of 1862, General Nelson Miles had Captain Ezra Ewers (known to the Cheyennes at Fort Keogh as White Hat) take a number of the Cheyenne Scouts out into the country south of Fort Keogh to mark out the territory where they could stake out their homesteads. They were instructed to ensure they built their homesteads 160 acres apart from one another. This territory encompassed an area beginning from Fort Keogh east along the Yellowstone River to the mouth of the Powder River, up the Powder River to the Big Horn Mountains near Sheridan, WY, west along this mountain range to the Big Horn River, down north to the Yellowstone river and back down to Fort Keogh. The reservation, which was to be their permanent homeland, comprising approximately 447,000 acres, was finally created by Executive Orders of 1884 and 1900, with the middle channel of the Tongue River as its eastern border, near the frontier cow-town of Ashland in southeastern Montana Territory.

C. Establishment of the Northern Cheyenne Reservation.

In 1884, during the peak of the range cattle industry, President Chester A. Arthur created, by an executive order, the Northern Cheyenne Indian Reservation on unsurveyed lands north of Tongue River. This outraged many of the settlers in the Tongue River and Rosebud Creek valleys. Some ranchers in the Tongue River valley were probably less than enthusiastic about the creation of a Northern Cheyenne Reservation on lands they considered open range. The order stated that the claims of "bona fide settlers" would be recognized. As a result, there was some activity to file on lands before the deadline. In any event, the Reservation boundaries excluded 46 Northern Cheyenne families who had been encouraged to homestead along the east bank of the Tongue River and along Otter Creek. At the same time, 46 white homesteads, both legal and illegal, had been established within the boundaries of the Reservation. (National Archives Record Group 75, Special Case File 137; Deaver, 1988; Brooke, 1981; Weist, 1977).

There were several attempts in the late 1880s and throughout the 1890s to dissolve the boundaries of the Tongue River Reservation. Tongue River Indian Agent, R. L. Upshaw, stated in 1889 that "a strong effort is being made by the citizens of Custer county to have these Indians removed from here, and many arguments are used in favor of the removal." (Department of the Interior, 1889:236). Special Indian Agent George Milburn's October 28, 1884 report to the Commissioner of Indian Affairs recommended the Tongue River Reservation be established on the Rosebud, but he also suggested a better solution was to remove the Northern Cheyenne to an existing

reservation. By June of 1884, Milburn was the attorney representing the Miles City cattlemen opposed to establishing a Northern Cheyenne Reservation. He worked to try to get the Northern Cheyenne homesteaders to move onto the Crow Reservation.

In 1893 a military post was established to maintain order. In 1899, Indian Inspector James McLaughlin went to investigate the possibility of removing the Northern Cheyenne from their Reservation and moving them into the southeast corner of the Crow Reservation. McLaughlin reported that the Northern Cheyenne and the Crow both vehemently opposed such a proposal.

The Cheyenne representatives had several letters from government officials assuring them that they could remain on the Tongue River Reservation undisturbed. (Department of the Interior,1899:3-4). One of the letters was from General Miles, dated June 1889:

> ... in regard to the proposed removal of the Indians [Northern Cheyenne], there is no good reason or justice in doing so. They have fulfilled their part of the compact [to remain at peace], ... they have an undoubted right, legally and morally, to remain where they are now located (Department of the Interior, 1899:4).

There is some confusion over which homesteading statutes were applied to the Northern Cheyenne homesteads on the east side of the Tongue River. According to the Department of the Interior 1889 report to the Commissioners, the Tongue River Indian Homesteads were originally taken up under the Homestead Act of March 3 1875[1]. It was the guidelines of this Act that Special Indian Agent Milburn explained to the Northern Cheyenne in March and April of 1883. The Tongue River valley was not included as part of the original reservation boundaries. According to Newell it was reserved for Indian homesteads under the Indian Homestead Act of 1886 by the Secretary of the Interior (Newell, 1980b:9-10).

In 1889, three years after the enactment of the Indian Homestead Act, Agent R. L. Upshaw stated that:

> at least half of the Northern Cheyenne were homesteading along the Tongue River . . .about half of them on the Rosebud River and its tributaries, Lame Deer and Muddy Creeks, and the other half [the Northern Cheyenne] on Tongue River from the mouth of Hanging Women Creek down to the mouth [of] Stebbin's Creek ... (Department of the Interior, 1889: 234).

Negotiations for a proposed extension of the Northern Cheyenne Reservation east to the Tongue River were then considered in order to present "the most favorable resources for the permanent settlement of the Northern Cheyennes" (Department of the

[1] Letter of Commissioner H. Price, Department of the Interior, Office of Indian Affairs, to George Yoakum Sept 9, 1882; and Report of E. D. Bannister, US Special Agent, Department of the Interior, Office of Indian Affairs, June 11, 1885

Interior, 1899:6). This required the government to remove 46 white settlers (15 'bona fide' legal settlers, five equitable rights settlers, 18 illegal squatters, and 8 'legal owners') (Department of the Interior, 1899:15-16) from the west side of the Tongue River and 46 Cheyenne families from the east side.

During negotiations, some of the Cheyenne chiefs representing their people sought to prevent the removal of Cheyenne homesteaders by extending the eastern boundary of the reservation to the divide between the Tongue and Powder Rivers. Cheyenne soldier chief, George Standing Elk stated: "We want the reservation extended to the divide east of Tongue River. We do not need the boundaries fenced; mounds are sufficient. We can irrigate from Rosebud and Tongue Rivers." (Department of the Interior,1899:89). Chief Medicine Bear stated "... leave us here that we may live and die in a country in which we were born." (Department of the Interior, 1899:87).

James McLaughlin's reaction to the Cheyenne testimonies was negative. He responded:

> [I] advise you to cheerfully accept the tract of land described, bounded on the east by Tongue River, as it will be utterly useless for me to recommend that your eastern boundary be fixed on the divide east of Tongue River, which would place it midway between Tongue and Powder rivers (Department of the Interior, 1899:90).

The current reservation boundaries were established in 1900. (Weist, 1977). In 1901, the white settlers on the newly expanded reservation lands in the Tongue River valley were ordered to leave. (Newell, 1980b:11). The Federal government paid the 46 white settlers $150,445 for their "improvements" (buildings etc.) on the west side of the Tongue River and compensated the 46 Cheyenne families with only $1,150 for their homesteads on the east side. Descendants of these families believe that because the government never paid fair value for these homesteads, the land is still theirs. (Feeney, 1986; Deaver,1988; Department of the Interior, 1899:15-16).

Even though it is commonly reported that the white ranchers wanted the Cheyenne removed from the Tongue River and Otter Creek areas, according to Joe Little Coyote:

> . . . some of the white ranchers and towns people were sympathetic to their plight and cause in trying to establish a permanent homeland in the Tongue River and Otter Creek areas, which has not been reported. In fact, a number of the ancestors of the early Cheyenne and white ranchers in area are still friends from the days the Cheyenne would work for these white ranches in response to their need for help. They have a lot of respect for the Cheyenne who worked for them, and still tell of how they were dependable hard workers. When the government in cooperation with the missionaries prohibited Cheyenne traditional sacred cultural practices, some of the white ranchers living in the Otter Creek areas provided for these ceremonies to be held on their lands, providing line-riders to assist with security and also cattle to help with food requirements.

The Cheyenne people were befriended by a number of poor white people that moved into the Ashland area, sharing some of their food with them in the early 1900s. Many Cheyenne still tell funny stories about each other when they worked for the white ranchers. The Cheyenne also tell of how some of their people actually married into some of the families of these white ranchers, although it was kept quiet because of the popular sentiment among the general white population that thought “intermarriage of the races” was wrong and should not be allowed.

D. Early Reservation History.

Once moved onto the Reservation, the Northern Cheyenne became dependant on the United States government rations for survival. As detailed in Historic Research Associates’ historic overview of the Tongue River region (1980:67-68), efforts to acculturate the Northern Cheyenne to the economic and social values and practices of their white neighbors intensified at the turn of the century.

In the early days, Indian reservations were regarded by many as interim solutions, necessary only until the cultural assimilation process worked itself out. Becoming impatient with the slow if presumed inevitable disappearance of the Indian tribes, however, and anxious to more fully appropriate the natural resources on the reservations into the expanding United States economy, early reservation administrative policies became startlingly repressive by today's standards.

The reservations in the late nineteenth century and early decades of the twentieth century were run, under the unfettered and often arbitrary rule of the Bureau of Indian Affairs (BIA), as oppressive institutions of forced enculturation. Regulations prohibiting traditional ceremonies, prayer, councils, and even the wearing of native clothing, were promulgated and enforced through Courts of Indian Offenses. Indian people were discouraged from gathering for social events. Whole families were punished through the withholding of rations (essentially meaning starvation) if one of their members aroused the ire of the BIA agent. Children were ripped from their families and sent to boarding schools where they were subjected both to harsh discipline, and too often also to sexual and physical abuse. All of these conditions were made worse, by the corruption of Indian agents into whose hands the fate of the Indians had been placed and who often enriched themselves and their friends with resources appropriated to keep their Indian wards alive.

Conditions became so harsh on the Northern Cheyenne Reservation that the population of the Tribe, already decimated by decades of warfare, continued to decline precipitously as a consequence of semi-starvation and disease, and perhaps despair, during the early Reservation years. These conditions persisted until well into the early mid-century era.

Education was thought to be one of the primary means in acculturating the Northern Cheyenne. The government established a day school in Lame Deer in 1887 and a boarding school in Busby in 1904. A contract school was established at St. Labre

in 1884, which was run by the Bureau of Catholic Indian Missions. Ironically, in 1889 the St. Labre School was temporarily closed:

> . . . on account of an unreasonable demand on the part of the Indians that the parents should be compensated for allowing their children to go to school; and it was deemed expedient to close the school for a season in order that the Indians might realize their loss and true position (Department of the Interior, 1889:236).

Acculturation also included efforts to discourage traditional medicinal practices in favor of western medical treatments. R. L. Upshaw noted that these efforts met with limited success. In 1889, he stated:

> . . . they are too impatient, and if the remedies of the physician fail to give immediate relief they fly off to their own old medicines or a sweat-house, often times destroying the effect of remedies scientifically administered. The habit of submitting themselves to the old doctors is still strong among them ... (Department of the Interior,1889:234).

To remedy these perceived problems, attendance at Indian schools was made compulsory and the Bureau of Indian Affairs Police was charged with rounding up truant children. Families that did not cooperate had their rations cut. In these boarding schools, Cheyenne children were forbidden to speak the Cheyenne language, required to cut their hair and wear western clothes, and segregated from their families. In addition, the Sun Dance and other native ceremonies were prohibited. (Feeney,1986:3-7).

Farming and ranching operations were encouraged on the reservation. In 1899, Indian Inspector James McLaughlin noted that:

> numerous white settlers told me that they employed the Cheyenne Indians in their harvest fields in preference to the white laborer, but apart from this work for neighboring whites they have had very little opportunity ... other than the cultivation of small garden patches, which, without irrigation in that arid region, seldom amount to anything (Department of the Interior, 1899:7).

James McLaughlin mentioned that the irrigation of small tracts of bottom lands along the Rosebud, Muddy and Lame Deer Creek valleys could be done at comparatively small expense.

> The cost of taking out ditches along the Tongue River would be much greater ... yet the greater quantity of land susceptible of being brought under irrigation along the west side of Tongue River might justify the outlay; but this can be done by individual Indians as they advance and recognize the benefits they would derive from the same (As quoted McLaughlin in Dept. of the Interior, 1899:8).

While Northern Cheyenne farming and ranching activities were restricted to the reservation, land elsewhere in the Tongue River valley was being settled almost exclusively by whites.

"Efforts by whites to establish ranches and to develop available resources have been mirrored by similar attempts on the Northern Cheyenne Indian Reservation" (Newell, 1980b:67). In 1903, the Northern Cheyenne received 1,000 cows and 40 bulls, and in 1907 received another 1000 head of cattle as a result of earlier congressional appropriations (Weist, 1977:161). By 1909, Indian Superintendent J. R. Eddy reported that stock raising was the "natural business" for the Indians of the Northern Cheyenne Indian Reservation, by which name the Tongue River Reservation came to be known. Eddy stated that:

> During the year a shipment of four year old steers was made for the Indians running stock on the reservation and it developed that the shipment included the heaviest range steers shipped to Chicago during the year, and that the prices paid were practically the highest offered during the season (Eddy in Weist, 1977:161).

By 1912, Northern Cheyenne ranchers owned a total of 12,000 head of cattle and 15,000 horses. (Feeney, 1986: 3-8). According to Joe Little Coyote, the Cheyenne "found this to be a culturally appropriate way of making a livelihood which was compatible with living off the land as they had always done in the past as fishermen, farmers, hunters of small game and natural food gatherers, and hunters of the buffalo in the Great Lakes and the Plains regions of North America. "

The Bureau of Indian Affairs then began a program to reduce the size of the Northern Cheyenne horse herds and place the Cheyenne cattle herds under communal ownership. This policy led to the destruction of the Cheyenne ranching economy. By 1929, the Cheyenne had only 3,000 horses. As a result of BIA mismanagement, the communal cattle herd declined to 4,200 by 1924 and was then sold or slaughtered to provide government rations. The Bureau then leased the best grazing land on the Reservation to white ranchers. (Feeney, 1986:3-8).

Drought years began in 1917. The drought of 1919 encompassed the eastern two-thirds of the state. With the drought came other problems, such as grasshoppers, fires and high winds. In the Tongue River region, the years 1919 to 1920 saw a shortage of water for irrigation purposes along the river. (Malone and Roeder, 1976; Malone et al., 1991; Lamphere, 1935). For example, by 1920, the Cheyenne irrigation ditch at Birney, originally built in 1910, had been abandoned and 500 acres of promising irrigation lands had been ruined by alkali seepage. (Weist, 1977:164). A general economic depression followed the drought, accompanied by declining wheat and cattle prices. This economic climate affected Indian as well as white farmers and ranchers. Another drought cycle began in 1929, accompanied by economic depression.

Although Cheyennes were never to bear arms again after being subdued, it is noteworthy that many Cheyennes fought and died for the United States in the great wars of the 20th century.

According to Joe Little Coyote:

> The Federal government in 1918 came to the chiefs of the Tribe requesting them to allow their people to serve in the United States Armed Services. This was symbolically accepted by the Chiefs kissing the American flag at a ceremony that was held near the hill where Head Chief (who was about 28 years old), and his friend Young Mule (who was 13 years old and a student at one of the Christian Mission schools.) had charged down the hill to meet their deaths rather than be dealt with by the white man's justice system. Their families being desperate for food, they had killed a beef and upon discovery by one of the white men who called them 'dogs,' Head Chief shot him. Upon learning that the agency police were coming after them, they elected to fight the soldiers stationed at the Lame Deer Agency. This incident happened at the east forks four miles east of Lame Deer in September of 1890. In any event, on a per capita percentage basis, more Cheyenne people than any other ethnic group in the United States have served in the wars the United States has been involved in since World War I. A number of Cheyenne have lost their lives in these wars, which is a matter of record with the United States government.

Joe Little Coyote summarizes this early period of Reservation history in powerful language:

> After surviving outright extermination and being placed into confinement status on the Tongue River Reservation in southeastern Montana Territory, the Christian Missionaries with the cooperation and financial support of the Bureau of Indian Affairs undertook behavioral modification programs and religious indoctrination programs for the purpose of civilizing the Northern Cheyenne people through a process of western education and Christianization which was designed to wipe out their way of life, to take their remaining lands away from them and to assimilate them into the mainstream of white American society. With these cultural genocidal programs the native language of the Northern Cheyenne was prohibited and the way these programs were administered subjected the children to harsh physical punishment for speaking it in school. The children were forced to attend Christian Mission and government boarding schools -- otherwise their parents were taken by the agency police to the government agency for sanction, e.g., they did not receive their food rations or had to do hard labor. Our religious ceremonies were outlawed by the BIA at the insistence of Christian Missionaries, our Cheyenne language was prohibited and we received severe punishment for speaking it in the schools our children were forced to go to. The children were forced to go through a type of education that frustrated their abilities to learn at our best levels of achievement in that, as defenseless children, they were mercilessly subjected to harsh, inhumane, cultural-genocidal practices in the intentional psychic destruction of their identity as a Cheyenne people.

The damage inflicted by these genocidal practices thrust the children into a profound state of uncertainty as to just who or what they were. The consequent despairing effects of this needless violence against the Cheyenne people, coupled with their continuing, desperate, impoverished conditions, are still being experienced in higher than normal rates of self-destructive behavior on the Reservation, when compared to the dominant society of America today.

Many of these sad facts are well known due to the personal experiences of a large number of contemporary Cheyennes having gone through the Christian Missionary and government boarding school experience, still bearing the emotional trauma and scars of being torn from the love and care of their families, being publicly ridiculed and humiliated for speaking our native language, made to feel embarrassed of their old people and our heritage, and silently having to take beatings that created fearful and submissive children. There was a favorite saying among these purveyors of western civilization: kill the Indian and save the child for God and Country.

This so-called civilizing process had a profound harmful impact on the humanity of the Northern Cheyenne people, and the trauma resulting from this has been carried over into these modern times. This trauma must be addressed through some healing process that reorients us to knowing that we are Cheyenne (because no matter what we do we can't be anything else than what we are) and understanding our world and our place in it, i.e., the Cheyenne Way is to re-center ourselves and thus make keener sense of our lives (Dr. Frank Rowland, 2001). In spite of what happened to us, we find the spirit of who we are as a people still intact. Now that there is some developing recognition of our "allodial rights to existence as an indigenous people in our homelands," [and] being a resilient people our spirit will ultimately serve to provide the driving force in finding a way to survive today and into the new millennium. (Little Coyote, 2001:6-8).

When the federal government in cooperation with the Christian Missionaries prohibited the Cheyenne religion. Those who practiced their ceremonials were reported to the authorities. They were taken to the government agency and sanctioned to do hard labor in subzero weather. When some of the old medicine people were caught doctoring they were physically whipped with horse quirts and beaten by the agency police, sustaining injuries some never recovered from (according to old agency records that were not completely destroyed in a fire sometime in the latter 1950s. BIA, pre-1950). The agency police would rope their sweat lodges and ceremonial tipis and drag them apart.

In addition, the Cheyenne people were subjected to methods of mass punishment. When the old Medicine people were caught performing their prayer ceremonies the whole family also had to suffer the consequences

of having their food rations withheld, and were relegated to the end of the line in other benevolent dispensations (designed for behavior modification) bestowed upon them by the government agents. As a result, the conduct of their ceremonies had to go "underground" and were performed out in the hills, in secret. The Missionaries preached that the religious ceremonial ways of the Cheyenne were unclean and of the devil. This was used to influence government policy in the prohibition of their sacred ways.

Today, this fear of retaliation is still present to a great extent in the psyche of many contemporary Cheyenne, and to some extent this fear continues to be reflected when the Cheyenne conduct their ceremonies. As a result, there is a lot of confusion and misinformation about the traditional medicine ways, and many of the present Medicine people who were properly educated and trained in these ways continue to be subjected to much undue criticism. Somehow, this has to be corrected if we are to have true religious freedom of expression in the practice of our sacred ceremonial ways.

In spite of the terrible things that happened to them, the Cheyenne people themselves are beginning to find that the spirit of who they are as a people is still intact. Now that there is some developing recognition of their rights to an integral existence as an indigenous people in their homelands, being an adaptable and a resilient people, the Cheyenne cultural spirit will ultimately serve to provide the driving force in finding a way to survive today and into the new millennium.

On September 8, 2002, Kevin Gover, the Assistant Secretary of Indian Affairs of the U.S. Department of the Interior, on behalf of the Bureau of Indian Affairs, at the ceremony acknowledging the 175th Anniversary of the establishment of the BIA, issued a formal apology to the American Indian for its historical role in the genocidal acts perpetrated against them, and in accepting this legacy of racism and inhumanity, it also accepted the moral responsibility of putting things right, and vowed that the BIA would never allow this to happen again. The Cheyenne people will wait and see if these promises will actually be kept.

E. Later Reservation History.

Although Congress adopted the General Allotment Act in 1887, 39 years passed before Congress adopted an allotment plan for the Northern Cheyenne Reservation which assigned a 160 acre parcel to each enrolled tribal member, 44 Stat. 690 (1926). Actual allotment did not commence until 1932 and Congress terminated the allotment policy two years later with the enactment of the Indian Reorganization Act of 1934 (IRA). As a result, virtually all of the Northern Cheyenne Reservation, both allotted and unallotted lands, remains held by the United States in trust for the Tribe or Indian allottees. (Chestnut, 1978; 4-5).

In 1936, the Northern Cheyenne enacted a Constitution which was approved by the Secretary of the Interior under the terms of the IRA. The Constitution established an elected Tribal Council as the governing body of the Northern Cheyenne Tribe as well as a Tribal Court. (Feeney, 1986: 3-9).

In 1954, a paved road was completed through the Reservation and electricity was installed reducing the Reservation's isolation. The Reservation economy remained impoverished, relying primarily on ranching and the subsidies from the Federal government. Land claims litigation against the United States brought in a $3.8 million settlement during the 1960s which was distributed to tribal membership and used for Tribal economic development and education programs. (Feeney, 1986: 3-9).

According to Joe Little Coyote:

> Beginning with the allotment policies in 1926, and the termination policies of the 1950s, the federal government undertook policies to break up the reservation lands in an attempt to get individual allottees to sell their lands into fee status and to terminate the federal status of American Indian Tribes. Fortunately, in the latter 1950s, the John Wooden Legs Administration, instituted a Land Acquisition Program which had the effect of holding the Tribal Land Base together. Otherwise the reservation lands would have been broken up to compromise the sovereign integrity of the Northern Cheyenne Tribe. And, even though these policies were repudiated with the self-determination policies of the 1970s (Pub.L. 93-638), beginning with the Allen Rowland Administration in the latter 1960s, the Tribe has had to fight costly modern day legal wars to protect its reservation homelands from the continuing commercial encroachments by energy-related corporate instrumentalities of the United States.

F. History of Coal Development on the Northern Cheyenne Reservation.

The substantial coal resources of the Northern Cheyenne Reservation have long been recognized. A 1928 Senate report on the Northern Cheyenne Reservation found that:

> The entire [Northern Cheyenne] Reservation is underlaid with a thick vein of coal. There are frequent outcroppings. This coal seems to be a cross between lignite and bituminous coal and is of fairly high quality. . . The Coal on the [Northern Cheyenne] Reservation cannot be developed commercially at this time, owing to lack of rail facilities. There is no doubt, however, that some time the coal will prove a valuable asset. [U.S. Senate, 1928: 12848 in Chestnut, 1978].

The Northern Cheyenne Tribe was also aware of the valuable coal resources beneath the Reservation. In 1925, the Tribe petitioned Congress to allot the Reservation's agricultural lands to individual Tribal members but asked Congress to "reserve all mineral, timber and coal lands for the benefit of the Northern Cheyenne

Tribe, said tribe to have absolute control of the same." See *Northern Cheyenne Tribe v. Hollowbreast*, 425 U.S. 649 (1976).

In the 1926 Northern Cheyenne Allotment Act, Congress provided that timber, coal and other minerals would be reserved for the Tribe's benefit and could be leased by the Secretary of the Interior with the Tribe's consent. However, Congress provided that coal, oil and gas and other mineral underlying allotments would become the property of the respective allottees or their heirs after 50 years.

In 1965, the Tribe first received expressions of interest from mining companies in the Reservation's coal reserves. In 1966, the Tribe asked BIA officials to draft the necessary documents for a public sale of Reservation coal leases. The BIA prepared a form of mining permit to be offered for bid by adapting an official form previously in use under Interior Department regulations. The official form provided for an exclusive prospecting permit, with an option to lease only a portion for the acreage covered by the permit. However, on the Northern Cheyenne Reservation, the option language was substantially expanded to give the permittees an option to lease the entire acreage. The terms and conditions of the coal lease options were established at the time of the offering of the permit when the Tribe and the BIA were uninformed as to the nature and value of the coal reserves covered by the leases. The primary financial terms of the lease options turned out to be far below fair market value. (Chestnut, 1978:11-12).

The first coal sale took place in 1966. Only one bid was received resulting in the issuance of a prospecting permit to the Peabody Coal Company with mining lease options covering 94,000 acres of Reservation land. Additional lease sales took place in 1969 and 1971, resulting in mining lease options being issued for another 260,000 acres of Reservation land. Thus, by 1971 lease option were held by mining companies to virtually the entire unallotted portion of the Reservation. (Chestnut, 1978:12).

At the about same time, the Tribe began to fear that individual Tribal members would attempt to lease allotted lands for coal development and lobbied Congress for legislation that would clarify that ownership of the Reservation subsurface belonged to the Tribe. In 1968, at the request of the Tribe, Congress terminated the grant of mineral rights to the allottees and reserved the mineral rights on the Reservation "in perpetuity for the benefit of the Tribe." However, the termination was expressly conditioned upon a prior judicial determination that the allottees had not been granted vested rights to the mineral deposits by the 1926 Act. In 1976, the United States Supreme Court held that the allottees had no such vested rights and the Tribe formally regained control of all of the mineral rights underlying the Reservation. *Northern Cheyenne Tribe v. Hollowbreast*, 425 U.S. 649 (1976).

In 1972, the Tribe received an unsolicited offer from the Consolidated Coal Company to lease 70,000 additional acres of Reservation land and rights to mine at least one billion tons of coal. The company wanted to construct four coal gasification plants on the Reservation. In exchange for these rights, Consol offered to pay the Tribe royalties and bonuses substantially higher than those provided in the lease sales offered by the BIA. In addition, the company offered an up-front donation of $1.5 million for construction of a new medical facility for the Reservation. (Feeney,1986:2-10).

Due to the substantially enhanced financial terms, Tribal leaders began to suspect that the previous lease agreements were inadequate. In addition, they began to realize that the scale of planned coal development was much larger than they had anticipated. The Tribe hired legal counsel to review the lease documents and numerous violations of Federal regulations were found. (Feeney, 1986: 2-10). In particular, these regulations set an acreage limitation of 2,560 acres on leases and on permits incorporating options to lease. The actual lease options exercised under the prospecting permits were far larger and ranged from 15,300 to 71,550 acres. In addition, the BIA had failed to conduct any kind of environmental impact analysis before issuing the leases. (Chestnut, 1978).

In 1973, the Tribal Council unanimously decided to petition the Secretary of the Interior to cancel the lease agreements. In 1974, the Secretary issued a decision which suspended coal development on the Reservation until environmental impact studies were completed and the Tribe's consent to the expanded lease acreages was obtained. This decision effectively blocked development although it did not formally terminate the leases. (Chestnut, 1978). In 1980 Congress enacted legislation establishing a framework for either mutually agreeing to cancellation of the leases, or failing such agreement, automatic cancellation. Through this legislation, cancellation agreements were made with several large coal companies and other smaller leases were cancelled automatically. (Feeney, 1986:2-11).

Joe Little Coyote summarizes the Tribe's attitude toward coal development as follows:

> The Tribe has been under tremendous pressure to develop its vast fossilized energy resources to address its impoverished conditions. In spite of this, the Tribe has chosen not to exploit these resources due to the uncertainties of potential impacts to the environmental and cultural integrity of its homelands and its people. As an alternative it has chosen a developmental direction of a land-based sustainable renewable energy resource development, with primary focus on solar, wind and bio-mass to energy conversion resources.

G. The Northern Cheyenne Response to Off-Reservation Coal Development.

Beginning in the 1970s, a consortium consisting of Montana Power Company and several major Washington and Oregon utilities, launched a plan to build two 750 MW coal-fired powerplants at Colstrip. The Tribe became concerned that, because of prevailing wind patterns, air pollution from these massive plants would pollute the Reservation airshed. Under prevailing legal standards, the powerplant was not obliged to minimize such pollution.[2]

In an unprecedented move, the Northern Cheyenne Tribe took action which

[2] The discussion in this section is adapted from S. Chestnut, The Fighting Cheyenne (2000).

changed the legal standard. The Tribe decided to become the first unit of government in the Nation – Federal, state, local or tribal – to voluntarily raise the air quality standard within its territory to the most pristine standard under law. Specifically, the Tribal Council moved to raise the Reservation air quality standard to the highest permitted by law – Class I – a standard which theretofore applied only to National Parks and Wilderness Areas. This Class I re-designation was legally challenged by the Colstrip utilities and others. These challenges were rejected by the United States Ninth Circuit Court of Appeals.

This strategy enabled the Tribe to force the Colstrip utilities to negotiate with the Tribe on a variety of issues. That negotiation was successful – the most stringent air pollution control technology was installed, a company-funded program for Tribal monitoring of Reservation air quality was established, a major employment preference program for Tribal members was established at the powerplants, a company-funded four-year college scholarship program for Tribal members was established, and modest financial assistance was provided by the companies.

In 1982, Secretary of the Interior James Watt held the largest Federal coal lease sale in the Nation's history. He offered for lease by public auction massive amounts of Federal coal in the Powder River Coal Region of Southeast Montana and North Central Wyoming. The tracts offered in Montana encircled the Northern Cheyenne Reservation to the north, east and south.

In a serious breach of his trust responsibilities, the Secretary formulated the sale in violation of his obligations under the Federal Minerals Leasing Act, the regulations controlling the Federal Coal Leasing Program, and the National Environmental Policy Act and its implementing regulations. Before the sale, the Tribe brought these concerns to the attention of the Secretary and to companies known to be interested in bidding at the sale. However, the Secretary and the companies disparaged and refused to address the Tribe's concerns.

The Tribe was therefore left with only one option – litigation. The Tribe commenced suit, seeking a declaratory judgment and injunction. It asked for a declaration that the Tribe's claims of breach of trust and statutory and regulatory violations were valid and for an order voiding all leases issued in the sale. This included leases which would support new mines in the Tongue River Valley, immediately east of the Reservation, and smaller leases which would merely extend existing mining operations at Colstrip and Decker.

The Tribe prevailed on all of its claims. Federal District Court Judge James Battin entered a declaratory judgment vindicating all Tribal claims and declaring all issued leases void. Perhaps the most enduring benefit of that decision was a declaration that, in fashioning Federal coal development in areas adjoining Indian reservations, the Secretary has special trust responsibilities to identify and mitigate adverse impacts on affected tribes.

In post-decision proceedings, Judge Battin permitted the Colstrip leases to be mined during the pendency of an appeal by the United States. However, the Tribe

appealed that post-decision adjustment and prevailed. On remand to Judge Battin for further proceedings, all leases for new production tracts were again terminated and a settlement was reached with Western Energy, the holder of the mine-extension leases at Colstrip.

In the settlement with Western Energy, the company agreed to a special program for enhancing employment opportunities for Tribal members in all Colstrip operations, an enhanced college scholarship program for Tribal members, and $1,000,000 in impact funding to the Tribe. In addition, as prevailing party in the litigation, the Tribe sought and obtained a very substantial award of all attorneys fees and expert witness fees and costs incurred in the case. In recognition of the Tribe's success on the merits in the case, Judge Battin issued an award which fully covered all of the Tribe's fees and costs throughout the nine years of litigation at both the trial and appellate levels.

Among its principal purposes, the 1982 Powder River Coal Sale was intended to launch major new projects to mine Federal coal in the Tongue River Valley. As described above, this goal was not achieved because of Tribal legal intervention. At the same time, however, another major new coal mining project – the Montco Mine – was being planned in the Tongue River Valley on private and State coal.

The Montco Mine would lie across the Reservation's eastern boundary, the Tongue River. Because private and State coal were involved, the Federal role was minimal; the State of Montana was the major player. The regulatory key to the Montco Mine project was its mining permit, issued by the State and rubber-stamped by Federal authorities.

Because the Tribe's resources are limited and litigation is expensive, for a number of years, the Tribe did not actively oppose issuance of the Montco mining permit, while others (Northern Plains Resource Council and Native Action) sought to block issuance and renewals of the permit. Those efforts were unsuccessful.

In 1996, the Tribe joined the fray, focusing (jointly with Northern Plains Resource Council and Native Action) on a proposed extension of the Montco mining permit. Taking a lead role in administrative proceedings on the proposed extension, the Tribe, in cooperation with its allies, contended that the mining permit could not lawfully be extended under the applicable state permitting statute. These efforts persuaded the Montana Department of Natural Resources and Conservation to deny the extension. Montco immediately brought suit in State District Court and prevailed.

The Tribe and its allies appealed to the Montana Supreme Court, with the Tribe again taking the lead role. In a case of first impression in the Nation, the Tribe and its allies prevailed. The Montana Supreme Court agreed completely with their position, holding that the Montco project could not lawfully obtain an extension of its mining permit and that the mining permit was therefore terminated. Montco has not applied for a new mining permit and its future is doubtful. If Montco should apply for a new mining permit in the future, before the State could act it would have to prepare an entirely new environmental impact statement addressing the concerns of the Northern Cheyenne.

H. Northern Cheyenne Culture Today.

The early reservation policies of the federal government were mistaken and disastrous. Among other failures, Indian cultures did not as a whole disappear, as policy makers presumed and planned, and tried their best to hasten. Some particular Indian cultures did perish, often through the actual demise of all or most of their members, but a great many more did not. Thus, by and large, Indian culture (as opposed to Euroamerican culture) did not in fact die out as policy makers presumed and planned. In particular, the following section on contemporary Northern Cheyenne culture makes the persistence of Native culture quite clear as regards the Northern Cheyenne and, as we just noted, it therefore remains central to any consideration of contemporary socio-economics on the Reservation.

Indian children ripped from their homes and put in boarding schools did not become "just like everyone else." Outlawing Indian religions did not destroy traditional belief and experience of the spiritual. The famous strategy of the well-meaning liberal reformers of US Indian policy in the late nineteenth and early twentieth centuries, summed up in the phrase, "kill the Indian, save the man," did not work because the "man" was the Indian and vice versa.

Culture went far "deeper" than the Euroamerican mind of that era could imagine. Further, the policies implemented to "kill the Indian" were in fact killing actual people, and subjecting those who survived to inhumane and intolerable conditions. As Joe Little Coyote explains in this concluding section, Northern Cheyenne culture although still dealing with the legacy of the past never-the-less remains vital today:

> The Cheyenne people still have to contend with the exploitive institutional vestiges of a colonial system that is inherently discriminatory to them. The Cheyenne people are becoming fully aware that these paternalistic colonial relationships debase the humanity of both the colonized and the colonizer, and must be broken to clear the way in the rebuilding a self-sufficient independent nation. The vestiges of the Missionary schools continue to push a hidden assimilation agenda that prepares the Cheyenne youth to leave the reservation to go out into the mainstream American society. Although the Cheyenne really have nothing against this, they feel that their children ought to be also prepared to enter back into own tribal society. The vestiges of these continuing cultural genocidal practices serve only to hinder the self-determination of the Northern Cheyenne Tribe in meeting its own developmental needs.
>
> The Northern Cheyenne people did not realize that the white man in taking over this country was driven by strange ideas of Manifest Destiny that were very destructive to all American Indian Tribes. For the Northern Cheyenne this has resulted in disequilibrium with their cosmological outlook based on these earth-lands. Given the opportunity, only they can put things back in balance by their own enlightened self-determined initiatives in their present on-going cultural adaptation processes.

> The present impoverished conditions of the Northern Cheyenne can be likened to a defeated nation in a post-war development situation in attempting to rebuild a nation in the context of the American Economy, yet bringing the cultural stone strengths of their past with them into the present. Its culture is still intact and well-meaning people and their institutions don't need to keep trying to frustrate it and/or replace it with European cultural-based religious philosophies. They still live with the earth-lands that created their own cultural philosophies of who they are as a people indigenous to the North American Continent.

Although the educational institutions founded by the Christian Missionaries have been forced to be more humanistic in the education and handling of Cheyenne children, in more sophisticated and deceptive ways they continue to push and agenda that is in many ways antithetical to Cheyenne cultural beliefs. To the extent they've used the Cheyenne culture in the education of these children, it is done in such a way that continues to send a message to the Cheyenne children that the culture of the Cheyenne people is of no real significance. Consequently, many Cheyenne children do not know anything of real substance about their culture, history and contributions to America. They are made to feel like the Cheyenne people don't really count for anything of real importance.

As Joe Little Coyote further explains:

> Today, even though many Cheyenne people have to some degree adopted the many different persuasions of the Christian faith, it is done in such a way that it is added to their own traditional beliefs, and not as a replacement of their own traditional sacred ways. Traditional Cheyenne people have always been open to almost any other belief if it is presented to them as being sacred and beneficial; the white missionaries never understood this. That is why Cheyenne people will pray with anyone willing to pray with them, regardless of religious persuasion. The only ones who have a problem with this are the representatives of the various Christian churches that apply man made doctrines requiring a complete replacement of Cheyenne beliefs.
>
> Today, the Northern Cheyenne people still carry on their traditional sacred ways. Annually, they hold tribal-level renewal ceremonies. In addition, individual ceremonies of fasting (vision quests), piercing (rawhide-pulling ceremonies), and other ceremonies are held during the ceremonial season which starts around the time the Beaver Star Formation (Cygnus) appears in the southeastern direction in the early spring. They begin with purification ceremonies in which their medicine bundles and ceremonial instruments are purified through a sweat lodge ceremony. In response to individuals pledging to go through ceremonies, after accepting their requests for help, preparations are made by the societal institutions in deciding where and when such ceremonies are to be held.
>
> Every effort is made to hold these ceremonies in secluded areas of the

reservation. The ceremonies are heavily dependent upon water sources: rivers, streams and springs. These water sources are used in a ceremonial way for washing off the sacred earth paints used in these ceremonies. Offerings of prayer cloths and tobacco are made at a number of these springs which are held to be sacred. They also use this water for their sweat lodge ceremonies, for cooking and other domestic uses during such ceremonies. Given off-Reservation restrictions, which encompass a number of their traditional use areas, some efforts are underway to secure rights to continue using such places for their ceremonies, e.g., Bear Butte and other State and Federal lands. The American Religious Freedom Act to some extent provides for this, but arrangements still need to be made with these jurisdictions in the development of policies acceptable to the Northern Cheyenne.

Although the ceremonies of the Northern Cheyenne people have to some extent adapted to the societal constructs of an ordered American society (e.g., holding ceremonies to take into account a person's employment schedules), the traditional substance and focus of their beliefs have not changed in maintaining their identity as the Cheyenne people. Ceremonial people have altered the times in which ceremonies are held so as to accommodate their need to make a livelihood in today's economy.

Today, many Cheyenne also continue to go to the traditional use areas and sacred sites on the United States Forest Service lands (e.g., the Custer National Forest just east of the reservation in the Tongue River Region) to hold some of their ceremonies. Although the Tribe and the Bureau of Indian Affairs maintain lists of these areas that are sacred to the Cheyenne, they are not to be distributed by anyone and are not to be made public, and may be divulged only on a need-to-know basis to authorities responsible for managing such areas. And, although some of the ceremonial people know of other areas lying on private lands off the reservation in the Otter Creek and Birney areas, they often refrain from going to these areas to hold their ceremonies because of the hostility of some of the landowners in these areas. The burial sites of the ancestors of the Cheyenne people that lived in these areas are considered part of their sacred belongings and should not be disturbed by anyone. If they are disturbed, there is recognition among the Cheyenne people that only qualified ceremonial people can appropriately provide for the required care and handling of these matters. The earth lodges, a number of which are in the area of Otter Creek, are very important sources for health and revelation.

The ceremonial, cultural and burial sites are considered sacred belongings of the Cheyenne people and are not to be disturbed by anyone, because they are part of an intimate relationship the Cheyenne have with Grandmother Earth, similar to the nurturing care relationship between a child and its mother. These burial sites contain the spiritual essences of the sacred life cycle of birth, death and rebirth, i.e., as provided in the

> creation of life with a physical and spirit form from Grandmother earth and the breath of life of the Creator *Maheo*, their physical form returning back to the earth and their spirit journeying back from whence it came. There is the belief that to disturb these essences can have terrible consequences that circumvents the process of the cycle of life, and a person's spirit can wander about the earth not able to make it back from whence it came. In any event, it is not the civilized thing to do in going about disturbing the graves of anyone, Native American or otherwise.

Among the present life of the people in their homelands, the young people are discovering that the sacred ways of their ancestors have meaning and purpose for today's times and conditions. They are finding that these sacred ways are the source of their identity as a people, and that they also have healing value for restoring balance and harmony with their cultural based humanity. Presently, at the Chief Dull Knife College, Cheyenne language restoration programs are being undertaken. And, coupled with education that prepares the young to enter back into their own Tribal society, it is believed that this healing process will finally allow for the Cheyenne people to become all that they can be, individually and collectively, in today's times. The only obstacle that has to be overcome to clear the way to the development of a self-sustaining socio-economic livelihood is the conditioned dependency mentality. Around the early 1970s, after over the next ten years, the Sundance ceremony was revived and it has been held regularly ever since. At that time there were probably only about three people that had sweat lodges on the Reservation. Today, you will find at least forty families that have sweat lodges, and it is not unusual to find at least six sweat lodge ceremonies going on every evening of the week in the Reservation districts. Traditional prayer ceremonials are being held every weekend of the year. And, beginning with the ceremonial season in the early spring and lasting all summer long, many of the people and their families are going out into the hills, on and off the Reservation, to hold individual ceremonies. The culture of the Northern Cheyenne is still very much alive today and every effort if being made to sustain it far into the future.

In conclusion, although the Northern Cheyenne have aboriginal and allodial title to their ancestral homelands in the Tongue River region, they had to go through terrible sufferings of outright extermination and cultural genocide to regain their homelands and in addition, they paid for these homelands through off-sets from their land claim settlement in 1964. At present the land-based culture of the Northern Cheyenne Tribe is transitioning through an adaptation process to a new self-sufficient and independent livelihood that will maintain the environmental and cultural integrity of its Reservation homelands. This newly developing livelihood will be based on the sustainable renewable energy resources of its own lands. In these regards, this overview of the cultural history of the Northern Cheyenne people clearly shows that the continuing commercial encroachments of the white man, as proposed in its coal-bed methane development within the Tongue River region, will have a destructive impact to its homelands, cultural resources, and its newly developing livelihood. In regards to the proposed coal-bed methane development in the Tongue River region, the Environmental Impact Statement process assumes that a certain degree of degradation from such development is acceptable. The Northern Cheyenne Tribe finds these assumptions to be unacceptable.

CHAPTER 3

SOCIAL AND ECONOMIC CONDITIONS

I. Introduction

Chapter 3 of this report describes baseline social and economic conditions on the Northern Cheyenne Reservation. The two overarching factors that shape the Reservation's present condition are: (1) the Northern Cheyenne Tribe's unique history, rich culture and traditions; and (2) the persistent overriding economic poverty of most of its members.

By bringing forward Northern Cheyenne culture and the present poverty-stricken condition of the Northern Cheyenne Reservation in the same breath, this report does not suggest that they are related. In fact, the opposite may be true. As shown in the previous Chapter, it is precisely those past policies aimed at fully appropriating Cheyenne resources into the expanding Euroamerican economy and simultaneously destroying Cheyenne culture, while really achieving neither, that laid the foundations for the current conditions of poverty on the Reservation.

This report makes clear that the Northern Cheyenne Tribe represents a distinct cultural, social, political, and economic entity within the Northern Plains region. Nevertheless, data relating specifically to the Northern Cheyenne Reservation or Tribe is often not broken out from county-wide or region-wide analyses. Indeed, Indian reservations were not broken out in decennial census counts until 1990. Important State and county health statistics do not readily distinguish the Northern Cheyenne Reservation from Big Horn and Rosebud County data generally. The Census of Agriculture still does not break out Indian reservation data. This lack of data that adequately distinguishes the Reservation and its people from the population at large remains a difficult problem for researchers in many areas, as they prepare studies such as this one. Too often, impact analyses, relying on such data, also fail to adequately address affected reservations as distinct and unique entities. The Northern Cheyenne Tribe constitutes a distinct, sovereign governmental entity, with its own defined territory, substantial resources, and constitutional responsibilities for its citizens and its resources. This reality also is implicitly denied when data adequately characterizing this distinct entity is not provided in the same ways as it is routinely provided for counties, states, and municipalities.

A review of Northern Cheyenne Reservation history leaves little reasonable doubt that contemporary Reservation poverty and dysfunction has its roots in past Federal policies that, aiming to hasten the forced assimilation of Northern Cheyenne into the mainstream of American life, concentrated on the literal destruction of Northern Cheyenne culture and livelihood. The dynamic relations between the Reservation community and its immediate region, and between the Reservation and the dominant society at large, were set in place in these past eras of Federal Indian policy. But once

such relations are established, they prove much more resistant to change than the original policies themselves. These relations which embody and perpetuate severe inequity, and to some extent the attitudes and assumptions that they originally expressed, had become ingrained in the very social fabric and institutional structure of the region.

Because Northern Cheyenne Reservation poverty is not so much a condition as a process or structural relationship between the Reservation and surrounding region, it tends to shape new development initiatives rather than being changed by them. This means that new development initiatives within the region, in the absence of conscious intervention, become part of this existing dynamic relationship and may tend to worsen rather than alleviate the poverty-stricken position of the Reservation. As showed in Part III.C of this Chapter, this is precisely what occurred during recent past energy development booms in the region.

Reservation poverty also persists as a result of the psycho-social damage that was inflicted upon the Northern Cheyenne people by the past Federal policies of forced cultural assimilation, and by unprincipled individuals to whom these policies had made the Cheyenne people subject, and before whom they were essentially defenseless, especially as children. A current rash of convictions of priests for sexual abuse of children entrusted to their care is, at this writing, a current news item. But the problem is hardly a new one, and it was apparently especially severe for the Northern Cheyenne as a subject population. Add to this the sometimes well-meaning but terribly misguided prosecution of Indian people merely for pursuing the daily ways and practices of their traditions. And all this occurred after decades of warfare under the harshest of conditions, and in then-current conditions of hardship and semi-starvation.

What is well understood now is that such experiences leave deep psychic scars on human beings – wounds that are passed down within families for generations, and even within whole societies. The effects may express themselves as severe anger or grief, as heightened vulnerability to alcohol and drug abuse, as reckless disregard or even suicide. Continuing poverty only makes such effects worse. When all this occurs within a relatively small, traditional, and enduring community, where people and families know each other intimately, the emotional effects of, for instance, seemingly unnecessary deaths or suicides are amplified even more.

The problems of inter-generational and social dysfunction are not determining factors, but they are limiting ones. They sap people's energy and will, and divert attention. There is little doubt that this affects the community's ability to more effectively challenge the long-endured conditions that keep the Reservation as a whole in relative poverty. They also, similarly, help define one dimension of the Reservation community's special vulnerability to impacts from off-Reservation energy developments. Such developments, for one thing, have been known to attract influxes of itinerant workers who themselves bring similar if as a whole less severe problems with them. They also often bring as well prejudicial or intolerant attitudes, along with increased supplies of recreational drugs.

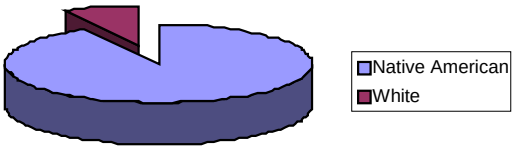
The next part of this Chapter introduces the reader to some general population characteristics of the Northern Cheyenne Reservation. The following part of the Chapter discusses the economic characteristics of the Reservation and attempts to identify some of the forces and dynamics that maintain the Reservation in its status of extreme poverty, vis-à-vis the rest of the region. The next part of the Chapter describes the importance of the Reservation's subsistence economy which allows many Tribal members to survive and maintain their cultural traditions despite harsh conditions of poverty.

Because the poverty-stricken condition of the Reservation community is so severe, it tends to dominate and override many other dimensions of peoples' lives. Because this is so, the rest of this Chapter describes the *human consequences* of the difficult poverty-stricken economic conditions: e.g. social dysfunction, violence, poor health and chemical dependency.

II. Demographics.

A. Reservation Population.

According to the 2000 Census, the population of the Northern Cheyenne Reservation is 4,470 persons, of whom 4,029 are Native American (Figure 3-1). It is important here to note that the total Reservation population of 4,470 given in the 2000 Census almost certainly underestimates the actual Reservation population. It is well known that the official census figures regularly undercount the actual population in low-income areas affected by poverty and social instability. People in such areas tend to be less fixed and less easy for census takers to locate and interview. Some people refuse to cooperate with the census or to make themselves known. Indian reservations are known to be one kind of area that the census especially undercounts. Another population that is regularly not fully counted is that of children. Both of these sources of undercounting converge on the Northern Cheyenne Reservation with its relatively large youth population.



Derived, Census 2000, SF 1, N. Cheyenne Reservation.

Figure 3-1

The 1990 decennial census provides undercount rates based on actual studies. It also provides both "official" figures reflecting the actual counts, and "adjusted" figures based on the undercount projections. The relevant adjustment rates for the Northern Cheyenne Reservation in the 1990 census are: for the total reservation population, 11.78%; and for the Indian population, 12.48%. Based on these rates, the total

population was raised from 3,923 in the official count to 4,447 in the adjusted count; and the Indian population was raised from 3,542 in the official count to 4,047 in the adjusted count. Using these conversion factors, the total Reservation population in 2000 was likely about 5,000.[1]

Tribal enrollment data indicates that the current number of enrolled tribal members is 8008 persons, of whom 4343 live on or near the Reservation. (Spang, 2-25-2002). Thus, almost half of the enrolled population lives off the Reservation. See Figure 3-2. However, the Reservation boundary is open and the on-Reservation and off-Reservation populations of Tribal members are somewhat fluid. The Reservation and its community remain the homeland and anchor for most Tribal members. As a community, and as individuals and families, Northern Cheyenne are generally less mobile than non-Indians; they less readily pick up their roots and put them down somewhere else. Family members may leave for a while, but they also return. Despite extremely limited housing and other necessities, changing conditions can bring more Tribal members back to the Reservation.

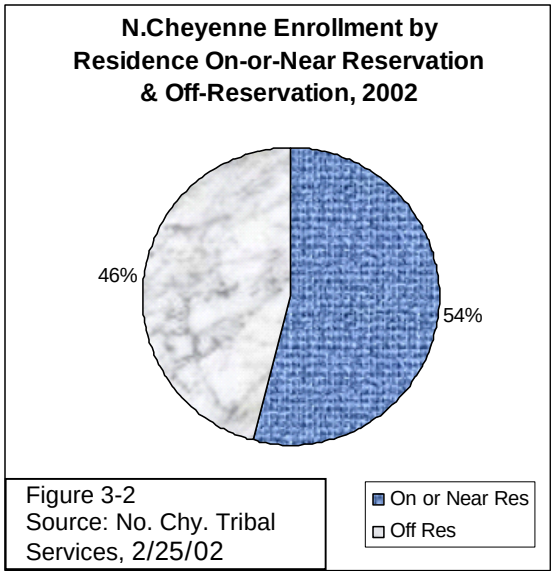


Figure 3-2
Source: No. Chy. Tribal Services, 2/25/02

The relatively high population density of the Reservation reflects this pull of land and community. That even more of the Tribal membership does not live on the Reservation reflects the lack of employment and other economic opportunities, as well as an extremely limited housing stock and other public services and facilities. See Chapter 5. It is likely that the on-Reservation population of enrolled Tribal members would increase if economic conditions improve, or even if there is a perception that conditions are improving.

B. Social Geography.

Every community or political jurisdiction has a location "on the ground," in some particular area of the landscape. It is not an accident that we call towns or Indian reservations or other culturally or socially meaningful entities "places." But such places are not defined only geographically; they also occupy positions within systems of social identities and economic exchange. In other words, the "location" of a place defines an

[1] Adjusting the official census count to better represent actual populations has become a politically and legally contentious issue. The 2000 decennial census does not provide adjusted counts for this reason. This report generally uses official count figures for technical and other reasons, so the conclusions it draws should be recognized as being conservative. For instance, the contrast between the population density of the reservation as compared to the population density of the neighboring non-Indian areas is actually probably somewhat greater than is represented in Figure 3-7.

area of natural geography, but it also constitutes a site within a landscape that is differentiated economically and socially, and perhaps culturally. A town, county, state, or Indian reservation occupies a position not just on territorial maps, but also on a "map" defined by dynamic relations of economic exchange and social, political, and ethnic identities.

Geographically, the Northern Cheyenne Reservation's most immediate social environment consists of Bighorn and Rosebud Counties, which it spans, the Crow Reservation which borders it on the west, and Powder River County immediately to the east. Below, the Reservation's demographic characteristics are examined in relation to neighboring non-Indian populations in the southeastern Montana area. These populations live in the same region, are similarly rural, share a common history to some degree, and are subject generally to many of the same larger economic and social forces as the Northern Cheyenne. Local non-Indian populations also make up the immediate social and economic environment with which the Reservation community is in dynamic interaction. These social and economic dynamics between the Reservation and the surrounding region help perpetuate the present social and economic baseline conditions on the Reservation.

Indian Reservation populations in this area still are often ignored or averaged into the general population in many planning studies and data bases. County health profiles, for instance, do not show the presence of Indian populations within the counties, and only indicate that there are different ethnic groups or populations with regard to one variable, that of median age at death, where the population is broken down into "White" and "Other." If one knows the area, of course, one knows that "Other" overwhelmingly means Native American, specifically Crow and Northern Cheyenne.

According to the 2000 Census (Summary File 1, 100% data), in Bighorn county the "Other" category (made up of Crow and Northern Cheyenne) is actually the majority population of the county. Figure 3-3. Rosebud County's population is fully one-third Northern Cheyenne. Figure 3-4. By contrast, Powder River County, which unlike Bighorn and Rosebud Counties does not contain a portion of an Indian Reservation, has only a small Indian population. Figure 3-5. Nevertheless, Native Americans, overwhelmingly Crow and Northern Cheyenne, make up nearly half (44%) of the population of all three counties as a whole. Figure 3-6.

Figure 3-3

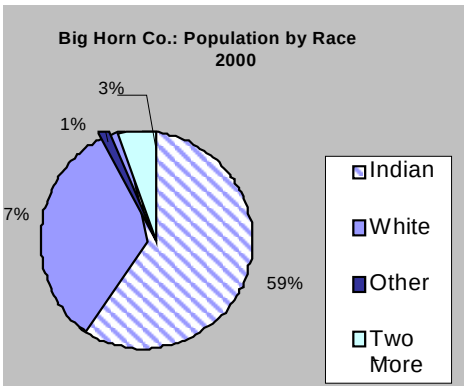


Figure 3-4

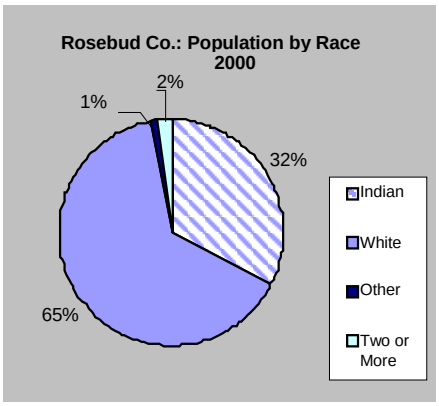


Figure 3-5

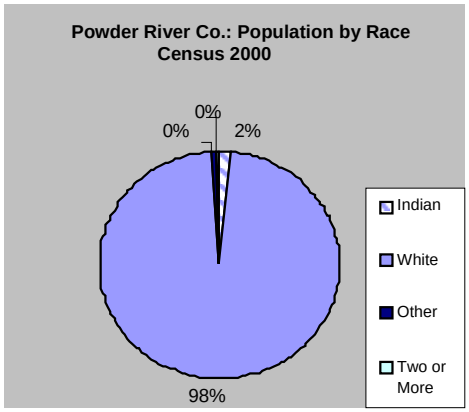
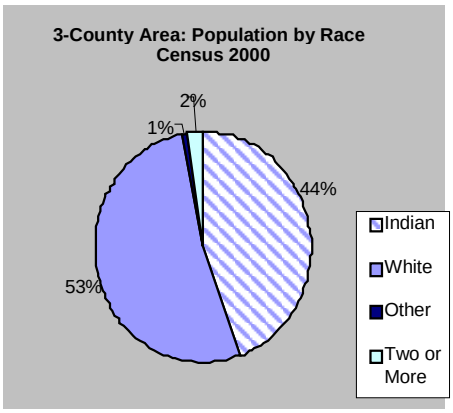


Figure 3-6



Members of the Northern Cheyenne Tribe by themselves make up 12 percent of Bighorn County, a third of Rosebud County, and nearly 20 percent of the three-county area. In short, the Northern Cheyenne Tribe, just in terms of numbers, is a significant presence. It should be noted that these are the most conservative figures. If one adjusts for the census undercount and also include people in the 2000 census who identified themselves as being "two or more" races (most of whom in this area will be part Indian) then the figures would be even higher. By comparison, in the 2000 census, 56,068 Indians made up only 6 percent of Montana's overall population.

C. Population Density.

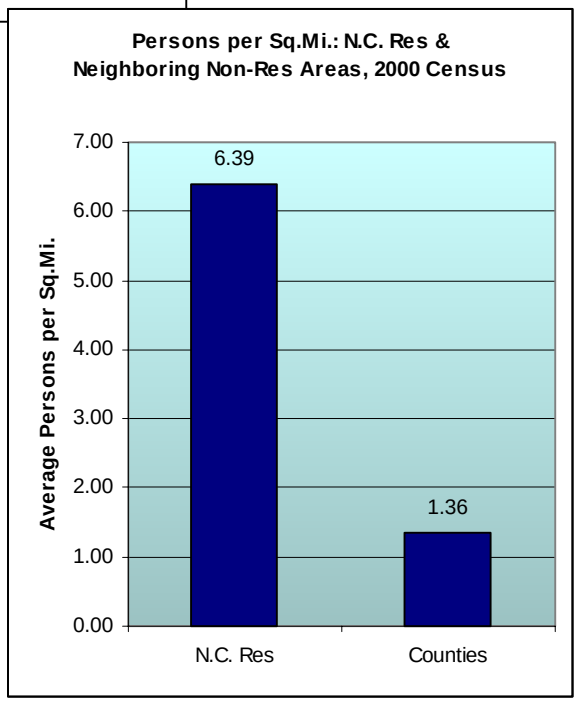
Until the mid- to late-1960s, the area of southeastern Montana that surrounds the Northern Cheyenne Reservation h remained highly rural and relatively isolated. Often described as the last and least settled region of the United States, it supported an agricultural economy based primarily on large ranches owned and operated by families with deep roots in the land, many of whom were (and are) descendants of the original settlers. With its agricultural economy, the area remained by and large an economic

"backwater," and the relatively stable Euroamerican communities were content to let many of the changes that occurred elsewhere pass them by. Socially, and in some respects economically, the Northern Cheyenne Reservation constituted an even more isolated pocket within this highly rural Northern Plains region.

All of this changed in the 1960s, with the advent of coal development. But except for specific "boom" conditions, localized in time and space, energy development did not drastically change the region's overall basic population. With an economy still based in resource extraction, the area remains sparsely populated. Industrial energy production, however, has changed the character of the region in other ways, and continues to affect established local communities, including the Northern Cheyenne Tribe, economically, socially, and culturally.

The population density of the region reflects its economy. Euroamericans are relatively mobile. If a local economy will not support them with jobs or livelihoods, they go somewhere else. This is often true of the children of established families in rural areas, as well as whole families who may be subject to currents of economic change. In southeastern Montana, as Figure 3-7 below illustrates, using data from the 2000 Census, the rural ranching and mining economy of the region supports only a little over one person per square mile (PPM). This figure represents the non-Reservation areas of Rosebud, Big Horn, and Powder River Counties, including the towns of Colstrip and Forsyth in Rosebud County, and Hardin in Big Horn County. The average of 1.4 PPM includes these local population centers. But it does not include either the Crow or Northern Cheyenne Reservation portions of Rosebud and Big Horn Counties.

Figure 3-7



As compared to the non-reservation areas with only 1.4 persons per square mile, however, the Northern Cheyenne Reservation has a population density of 6.4 persons per square mile. As a community, the Northern Cheyenne Tribe has its homeland in the Northern Cheyenne Reservation. The Reservation community as a whole is not mobile within the larger U.S. social economy; and in general Northern Cheyenne families and individuals are far less mobile than their local Euroamerican counterparts, even though the latter also may be representatives of established communities with deep local ties.

The powerful rootedness of the Tribe in its homeland, the value of its traditions and culture to its members, and the pull of the tribal community on its members, mean

that people remain on the Reservation in numbers greater the local and regional economy supports. Because they are so much less mobile, many Northern Cheyenne tribal members endure poverty and joblessness to remain on their homeland and within their community. That the local agricultural economy cannot support the population of the Tribe within the land base it has been allotted is one dimension of the severe poverty found today on the Reservation.

Without going more deeply into its historical, political, and economic causes and implications, it is clear that the simple demographic variable of population density marks off the Northern Cheyenne Reservation from, and within, its larger region. This distinction in turn relates to the Northern Cheyenne Tribe's unique history, culture, economic condition, and continuing identity within the region. Tables 3-1 and 3-2 provide further breakdown of the data from which Figure 3-7 is derived.

Table 3-1 Land Areas and Population by Census Tract – Northern Cheyenne Reservation

County	Tract	Sq. Miles	White	N. Amer.	Total Pop	PPM
Rosebud	9404	380.764	239	2,632	2,928	7.69
Bighorn	9403	318.308	111	1,397	1,542	4.84
Totals		699.072	350	4,029	4,470	**6.39**

Table 3-2 Land Areas and Population by Census Tract – Off-Reservation Areas

County	Tract	Sq. Miles	White	N. Amer.	Total Pop	PPM
Rosebud	100	2,691	2,616	46	2,728	1.01
Rosebud	200	1,938	1,213	98	1,374	0.71
Rosebud (Colstrip)	300	12.7	1,975	265	2,353	185.93
Big Horn	100	857	2,947	1,142	4,358	5.09
Big Horn	400	610	138	6	145	0.24
Powder River	100	3,296	1,810	33	1,858	0.56
Totals		9,405	10,669	1,590	12,816	**1.36**

Montana Department of Commerce, Census and Information Center, Interactive Maps On Line. http://ceic.commerce.state.mt.us/Maps&GIS/Maps/index.htm Note: The figures for "Total Population" include additional categories of persons not shown in this Table.

The presence of the Reservation as a unique, irreplaceable, and non-fungible land base for the Northern Cheyenne Tribe is one reality that distinguishes the Cheyenne from local Euroamericans. One measurable consequence of this difference is that the population density of the Reservation land area already is roughly six times that of the surrounding areas. Northern Cheyenne respond more to place and community

and (for several reasons) less to economic imperatives than do many non-Indians. On the one hand, there may be many reasons for people to leave the Reservation, since life on the Reservation can be hard and available resources are entirely inadequate even for the roughly half of the tribal membership that lives there. But on the other hand, Cheyenne often feel a strong pull to return and live with their own community on their own land. The relatively high population density of the Reservation reflects this pull of land and community. That even more of the Tribal membership does not live here reflects the economic limitations we have been noting, as well as an extremely limited housing stock. See Chapter 5, Part I.

Thus, many people who are off of the Reservation at a given time regularly return, while some of those who are on the Reservation now will leave for a while. All this means also that the numbers of people on the Reservation can shift relatively rapidly. This is not entirely unlike boomtown conditions anywhere; but the realities of place and community on the Reservation are different from those of other places caught in energy development booms.

In the recent past, for example, the possibility of jobs in nearby energy developments at Colstrip brought people back to the Reservation. Many jobs were created, but very few went to Cheyenne. When far fewer jobs than anticipated materialized for returning Cheyenne, the *unemployment rate* on the Reservation actually *increased,* and already stressed social service and economic resources became even more strained (Feeney, 1986; BLM, 1989).

Social service planners on the Reservation identify another factor unrelated to regional energy development that could bring or force significant numbers of Northern Cheyenne living off the Reservation back home in the near future. Recent "welfare reform" laws impact off-Reservation Cheyenne differently and more adversely than Tribal members living on their Reservation. Also, Tribal members off the Reservation typically lack the social support networks of family and friends they have on the Reservation. As off-Reservation Cheyenne are forced off of welfare in the cities, they may come back to the Reservation, putting even more strain on scarce resources. The two independent factors of (1) the possibility of more local jobs with currently proposed coal bed methane and coal development, and (2) of welfare reform, threaten to converge and amplify each other's effects.

D. Age Structure.

The age structure of the Northern Cheyenne Tribe also is quite different from that of the surrounding Euroamerican population. The age distribution of the Northern Cheyenne Tribe is much more heavily weighted toward the young – that is, the Tribe has relatively more young people and fewer elders. This distinctive age structure also reflects its unique and difficult history. Figures 3-8 and 3-9, together with Table 3-3 illustrate the distinctive age structure of the Northern Cheyenne Reservation population as compared with the age structure of neighboring Euroamerican populations.

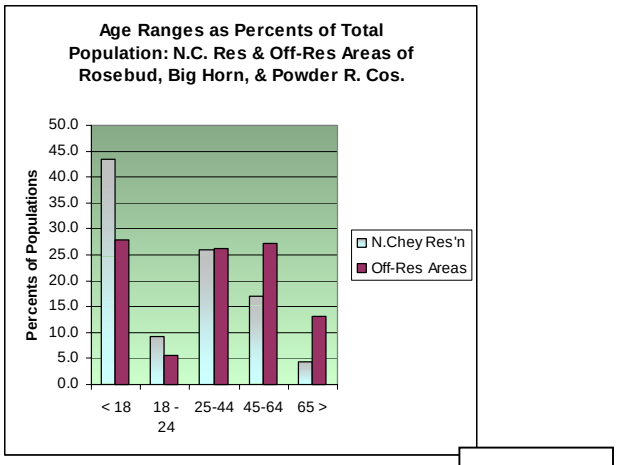


Figure 3-8

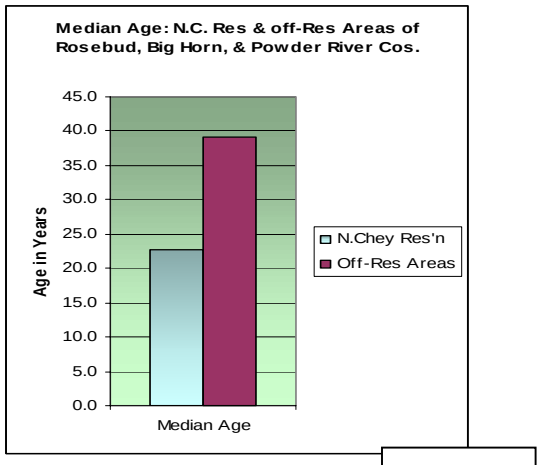


Figure 3-9

Table 3-3 -- Distributions: Northern Cheyenne Reservation and Non-Reservation Portions of Rosebud, Big Horn, and Powder River Counties.

ounty	Census Area	Total Pop.	Percent of Total Population					Median Age
			< 18	18 - 24	25-44	45-64	65 >	
NC RB	**Tract 9404**	**2,928**	**43**	**10.2**	**25.4**	**16.6**	**4.7**	**22.7**
NC BH	**Tract 9403**	**1,542**	**43.9**	**8.4**	**26.5**	**17.3**	**4**	**22.7**
Totals --		**4,470**	**43.5**	**9.3**	**26.0**	**17.0**	**4.4**	**22.7**
RB	**Tract 100**	**2,728**	**24.1**	**5.6**	**23.9**	**28.7**	**17.7**	**42.9**
RB	**Tract 200**	**1,374**	**30.4**	**5.7**	**24.5**	**29.3**	**10**	**37.5**
RB	**Tract 300**	**2,353**	**34.3**	**6.1**	**28.7**	**27.8**	**3.1**	**35.4**
BH	**Tract 100**	**4,358**	**30.2**	**7.1**	**26.5**	**22.9**	**13.2**	**35.6**
BH	**Tract 400**	**145**	**22.1**	**4.8**	**30.3**	**26.9**	**15.9**	**41.5**
PR	**Tract 100**	**1,858**	**26.6**	**4.8**	**23.3**	**26.8**	**18.5**	**42.1**
Totals --			**28.0**	**5.7**	**26.2**	**27.1**	**13.1**	**39.2**

Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrices PCT12 and P13.

The age profile summarized in Figures 3-8 and 3-9 and Table 3-3 directly reflects the Northern Cheyenne Tribe's history over the last century. From a purely demographic perspective, prolonged warfare and the difficult events prior to the establishment of the Reservation took their toll on the Northern Cheyenne Tribe's numbers.

Extremely difficult early years on the Reservation followed the decades of Plains warfare. Increasingly surrounded by hostile Euroamerican settlers, and governed by arbitrary and often corrupt Bureau of Indian Affairs (BIA) agents, the Northern Cheyenne Tribe dwindled even farther. Starvation and disease were the most significant factors in causing the continuing decline in population during the early Reservation years. Weist provides one summary of the adverse conditions under which the Northern Cheyenne subsisted during this era:

> Although the Cheyennes had been basically healthy when they settled on the reservation and experienced an initial increase in population, by 1916 the number of deaths exceeded births, a situation that was to continue into the Thirties. New diseases—tuberculosis and trachoma—ravaged the people, infecting an estimated forty to sixty percent of the population (Weist, 1977: 191).

The proceedings from a 1929 investigation conducted by a special subcommittee of the U.S. Senate Committee on Indian Affairs provide a detailed review the of intolerable conditions on the Northern Cheyenne Reservation. The survey of conditions on the Northern Cheyenne Reservation was part of larger Senate investigation in which Senator Burton K. Wheeler of Montana played a prominent role. The Report concluded that the primary cause of high rates of illness and early death was chronic prolonged semi-starvation.

The work of this Subcommittee prominently helped bring about passage of the Indian Reorganization Act (IRA) in 1934. One respondent during the Northern Cheyenne Hearings estimated the Tribe's reservation population at that time to be between 1,400 to 1,500 persons (U.S. Senate Committee on Indian Affairs, 1932: 12780), providing one helpful population baseline. Verne Dusenberry (1956:74-75) says that the pre-contact population of the Tribe was never more than 4,000. If we take this figure of 4,000 to approximate the Tribe's population before the years of warfare and confinement on the Reservation, then by the 1930s the Northern Cheyenne Tribe had experienced a population decline of some 65-70%.

After passage of the IRA, conditions on the Reservation began to slowly improve. The Tribe's population stabilized and then began to rapidly recover. In 1956, Dusenberry estimated the Tribe's population on the Reservation at about 2,000. From this mid-century figure the Reservation's population has increased rapidly. These historical circumstances largely account for distinctive age profile of the Reservation population today with its relatively large proportion of young people and fewer elders, as compared with neighboring Euroamerican populations. Although relatively better, conditions on the Reservation remained desperate by the standards of developed nations in the 20th century. Ironically, hardly had the Tribe began to recover from the devastations of war and starvation on the Reservation than it confronted the threat from coal and other energy development beginning in the late mid-century period, and continuing to the present.

The large number of young people relative to elders, however, is more than just a statistical historical fact, it also has consequences for the Northern Cheyenne Tribe

today. With relatively fewer elders to pass on their traditional knowledge, the transmission of the Cheyenne culture becomes more problematic. Although this problem results from what happened to the Tribe in the past, it is a problem that only the Tribe itself can address in the present. In short, while current conditions have historical causes, they also have present and future consequences for the community.

For example, during the 1980s coal development dollars funded new parks, swimming pools and other recreational facilities and opportunities in Colstrip, off the Reservation. See Chapter 5, Part IX. These new facilities naturally drew many of the Tribe's young people away from the Reservation community, helping orient them instead to the youth cultures of the dominant society. As one Tribal member put it: "We didn't have facilities like that. We were blindsided by those developments. Northern Cheyenne young people were just sucked right out of here." (Mexicancheyenne, 1-25-2002).

The pull of young people to improved facilities off the Reservation reduces even further their opportunities to spend time with Tribal elders and to learn Tribal traditions, values, and history, that the Tribe's demographic profile already makes problematic. The critical task of passing on the tribe's traditions becomes even more difficult.

In sum, the age data presented here, when put in comparative and historical context, reveals a demographic profile that distinguishes the Tribe from neighboring communities. It also represents one of the unique vulnerabilities of the Northern Cheyenne Tribe in the face of impacts from proposed large-scale energy developments in the region.

III. Regional Economics.

A. Relative Poverty.

It is no secret that the Northern Cheyenne Reservation is among the poorest regions in the United States. The accompanying table and chart, using economic data from the 1990 census, compare per capita incomes by race in Rosebud County, Montana.

Table 3-4 shows a huge disparity in incomes in Rosebud County, between the Indian and the non-Indian populations. On a per capita basis, whites in Rosebud County enjoy nearly three times as much income as their Indian neighbors. White households enjoy more than twice the income of Indian households. The reason that the disparity in household is not quite as great as the per capita disparity is probably the result of larger households on the Indian side, as people join together to pool their meager incomes. Virtually all of the Indians in Rosebud County are Northern Cheyenne, and the vast majority of Northern Cheyenne live in the Reservation portion of the County.

Table 3-4 – Income Disparities -- Rosebud Co.

Per Capita Income by Race 1990 Census		
	Indian	$4,367
	White	$12,676
Median Household Incomes 1990 Census		
	Indian	$14,350
	White	$32,700

Given the figures in Table 3-4, it is hardly surprising that the poverty rate on the Northern Cheyenne Reservation is some four times greater than the poverty rate of neighboring non-Indian portions of Rosebud and Powder River Counties. See Table 3-5.

Table 3-5 - Poverty Rates, 1990 Census

Northern Cheyenne Reservation	47%
Non-Reservation Portions of Rosebud & Powder River Counties	12%

Indian people, just like everyone else, depend on jobs and business opportunities for livable incomes. In this sense, lower average incomes on the Reservation reflect lack of access to employment and other economic opportunity. an indication of the scope of the problem can be gleaned from Table 3-6. The next section of this chapter examines this differential access to employment opportunities in greater detail.

Table 3-6 Northern Cheyenne Reservation Employment Data – 1999

Total Potential Labor Force	2437
Total Not Employed	1719
UNEMPLOYMENT RATE	**71%**
EMPLOYMENT RATE	**29%**

Source: BIA Labor Force Report, 1999.

B. The Relationship Between Education, Income and Employment.

Educational attainment receives significant economic rewards across the nation. The income received by individuals is significantly affected by their educational accomplishments. Higher levels of education clearly boost the productivity of individuals on the job and with that high level of education comes higher rewards for their labor efforts. In 1998, for instance, Americans who did not finish high school earned 27 percent or $7,600 per year less than those who did earn a high school diploma. Those who received some college education earned 52 percent or $15,000 per year more than those who only finished high school.[2]

The same pattern is found in Montana. Across Montana counties, those counties with a higher percentage of the working-age population with post-secondary education tend to have higher median household incomes and those with a higher percentage of the working-age population that did not finish high school tend to have lower median household incomes.[3]

Education is valued on the Northern Cheyenne Reservation. Parents and families make extra efforts, often with minimal resources, to send their children to the best available schools. Given the distances involved in this rural area, such commitment may demand considerable investments in time and transportation costs for after-school events, even where bussing is available for regular school hours. For decades the Northern Cheyenne people had wanted a Reservation high school in Lame Deer. Finally, through intense effort and lobbying they acquired a new high school district was formed and a new school was constructed in Lame Deer in 1997. See Chapter 5, Part V. In the face of difficulties associated with poverty, and sometimes overt resistance, the Cheyenne community's commitment to the education of their young people remains strong.

Education levels on the Northern Cheyenne Reservation are relatively high. For instance, the 1990 Census indicated that 38.4 percent of Reservation residents over 25 had some college education. In Rosebud County as a whole about the same

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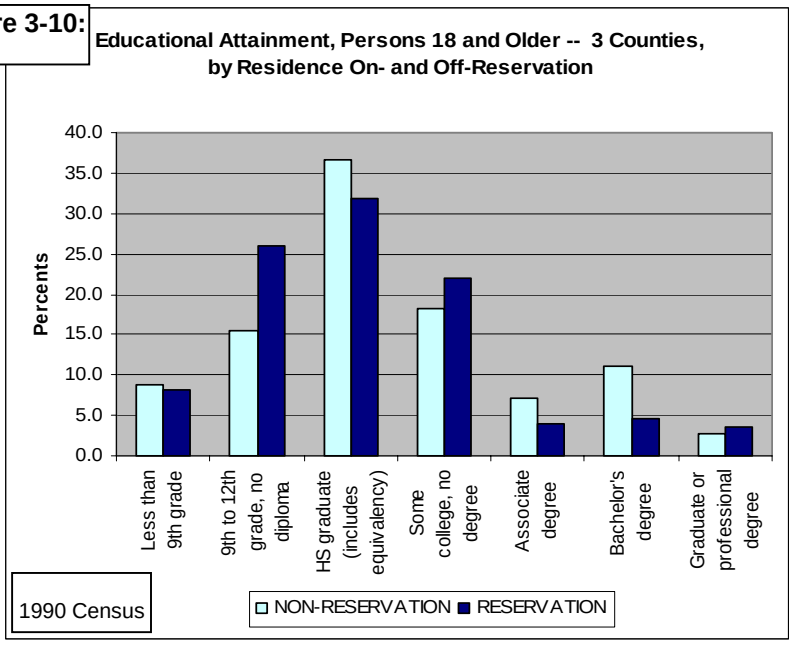
[2] U.S. Department of Commerce, Bureau of the Census, Current Population Reports, Series P-60, "Money Income of Households, Families, and Persons in the United States," "Income, Poverty, and Valuation of Noncash Benefits," various years, "Money Income in the United States: 1995," P60-193, "Money Income in the United States: 1997) P60-200, and "Money Income in the United States: 1998" P60-206. The table from which the data was taken was prepared in October 1999. http://nces.ed.gov/pubs2000/digest99/tables/XLS/Tab386.xls

[3] These statements are based on 1990 Census data since the 2000 detailed Census data is not yet available at the county level. In a regression of median household income on the percentage of those over 25 who have post-secondary education, the percentage of the population living in urban areas, and the percentage of the population over 64, the coefficient on education is positive and significant at the 4 percent level. Similar regression analysis using the percentage of those over 25 who did not finish high school shows a significant negative coefficient. Because those two education variables are correlated the relative importance of each cannot be determined from the Montana county level data.

percentage (41.1 percent) had some college education. On the Reservation, 10.3 percent of residents over 25 had a bachelor's degree or higher while that percentage was 13.4 percent for Rosebud County. On the other hand, in 1990 there was a higher percentage of Reservation residents who had not obtained a high school diploma: 35.2 percent versus 21.7 percent for Rosebud County as a whole.

Figure 3-10 breaks out the Reservation from the non-Reservation areas and shows the educational attainment of the Northern Cheyenne Reservation population (persons 18 years and older), compared to the non-Reservation portions of the three neighboring counties. The percentage of the population with a high school diploma and with some college is roughly similar on and off the Reservation. Perhaps the most notable differences are the larger proportion of persons on the Reservation without high school or equivalent diplomas, and the larger percentage off the Reservation with college degrees. However, given the significantly more difficult conditions of life on the Reservation, it is perhaps surprising that these differences are not greater.

Figure 3-10: **Educational Attainment, Persons 18 and Older -- 3 Counties, by Residence On- and Off-Reservation**



If the average income associated with various levels of educational attainment across the United States in 1991 are assigned to the Reservation and Rosebud County populations, expected income levels for those over 25 would be quite similar: $25,600 on the Reservation and $26,700 in the county. Only a 4 percent difference would be

expected based on the educational differences.[4] But average incomes on the Reservation are much lower than this. Average family incomes were 45 percent lower on the Reservation in 1990 and per capita incomes were 52 percent lower than in Rosebud County as a whole. See Table 3-7.

Table 3-7
Educational Attainment and Income - 1990

	Northern Cheyenne Reservation	Rosebud County	US Average Income by Education
No High School Diploma	35%	22%	$17,867
High School Diploma	27%	37%	$23,429
Some College	38%	41%	$34,469
Expected Average Income	$25,678	$26,732	
Ration: No. Chy/ Rosebud	96.1%		
Actual Average Family Income	$18,296	$33,543	
Ratio: No. Chy/ Rosebud	54.5%		

Source: 1990 Census of Population; see footnotes in text.

Clearly the educational attainments of the Northern Cheyenne, especially the higher education accomplishments, are not being rewarded the way similar educational levels are rewarded off the Reservation and around the nation. The very limited employment opportunities available to Reservation residents which result in very low rates of employment largely explain this massive gap.

The above data is confirmed by 1990 census data comparing the employment rates of high school graduates aged 16 to 19 (not enrolled in school) living on and off the Reservation in Rosebud, Bighorn and Powder River Counties. The data shows that only 18.6 percent of the cohort living on the Reservation was employed, compared to 77.8 percent of the same age and educational cohort living off the Reservation. Fully *100 percent* of the off-Reservation whites from this age and educational cohort were employed. Of the on-Reservation cohort, 37.2 percent were *un*employed and 44.2 percent were not in the labor force. The on-Reservation cohort was composed entirely of Native Americans. See Tables 3-8 and 3-9.

[4] 1991 income levels were used because the 1990 data did not distinguish between different levels of college education. The income levels by education level were weighted by the percentage of each population that had that level of educational attainment to calculate the expected average income.

Table 3-8
School Enrollment, Educational Attainment and Employment Status
Persons 16 to 19 years

High School Graduate	On-Reservation	Off-Reservation
Employed	18.6%	77.8%
Unemployed	37.2%	22.2%
Not in Labor Force	44.2%	0.0%
TOTAL	100.0%	100.0%

Data Set: 1990 Summary Tape File 3 (STF 3) - Sample data.

Table 3-9
Race by School Enrollment, Educational Attainment and Employment Status
Persons 16 to 19 years

High School Graduate	On-Reservation Native American		Off-Reservation White	
	Number	**Percent**	Number	**Percent**
Employed	**8**	18.6	40	100.0
Unemployed	16	37.2	0	0.0
Not in Labor Force	19	44.2	0	0.0
TOTAL	43	100.0	40	100.0

Data Set: 1990 Summary Tape File 3 (STF 3) - Sample data

Although the numbers of youth represented in Table 3-9 are not large, the differences shown are great enough, nevertheless, to be significant. Furthermore, the data is generally consistent with other data presented earlier in this Chapter which shows that unemployment and poverty are rampant on the Reservation and that the age structure of the Reservation is highly skewed toward the younger age brackets in comparison to much larger non-Reservation populations in the three neighboring counties.

The lack of economic returns to the educational attainments of the Northern Cheyenne is reflected in the data on food security collected in a 2001 Chief Dull Knife College study sponsored by the United States Department of Agriculture.[5] Those who had received post-secondary education were almost as likely to face food insecurity as those with a high school diploma or less, 62 percent versus 75 percent. Those with some college education were as likely as those who did not finish high school to be food

[5] Summary Report, 2001 USDA Small Grant Project, "The Relationship of Food Assistance Program Participation to Nutritional and Health Status, Diabetes Risk and Food Security Among the Northern Cheyenne."

insecure (but not hungry); those with a college degree were as likely to be food insecure and hungry as those who did not go beyond high school.[6] The economic returns for Northern Cheyenne going to college often were not sufficient even to assure that food was on the table.

It is not only college education that fails to earn the same economic rewards on the Reservation that are associated with improved skill levels elsewhere in Rosebud County, in Montana, and in the nation. Blue-collar workers on the Reservation who are certified in construction trade skills and/or have put in thousands of hours developing those construction trade skills also find it difficult to provide themselves with a livelihood using those skills. In 2000-2001 the Northern Cheyenne Tribal Employment Rights Office (TERO) had 682 Tribal members who were registered as seeking employment. This number of Tribal members seeking employment through TERO was almost as large as the total number of employed Tribal members in 1999 (719). See Table 3-6 above. Of these TERO clients, 393 (58 percent) were construction trade certified and 199 (29 percent) were experienced skilled construction trades workers who had more than 5,000 hours of experience in their trade.[7] Despite this training, certification, and extensive skilled work experience, these Tribal members were not able to obtain jobs in their fields. Again, the training and experience that regularly receives significant economic rewards off the Reservation are not being similarly rewarded on the Reservation.

In sum, educational attainment, income and employment are closely associated in the United States and Montana. However, this association breaks down dramatically on the Reservation. Wages, of course, are the primary source of income for the Northern Cheyenne just as they are for others in the United States, so the lack of association between educational attainment and income and employment has seriously adverse consequences for the Northern Cheyenne people.

C. The Economic Impacts of 1970-1990 Energy Development on the Northern Cheyenne Reservation Region.

This part of Chapter 3 examines the economic impacts of the expansion of energy development in the three-county area surrounding the Northern Cheyenne Reservation in the 1970s and 1980s. Energy extraction and processing provide some of the highest paid jobs available in Montana and produce very valuable commodities. For that reason, energy development is usually assumed to provide very positive support for local economic development efforts, especially in rural areas where well-paid jobs are relatively scarce. During the first decade of the 21st century energy developments in the

[6] Ibid. Table 8.

[7] Northern Cheyenne TERO data summary prepared for the Otter Creek EIS, January 1, 2000-December 31st, 2001.

same region, including new coal mining and coal bed methane development, are being proposed and many of the same economic development claims are being made. This report reviews the actual impacts of the previous energy development in order to obtain useful information to assist in evaluating the likely adverse economic impacts on the Reservation from those new energy development proposals, in the absence of effective mitigation.

1. The Scale of the Energy Development 1972-1990.

Between 1972 and the early 1980s coal, oil, and electric production in the three county areas around the Northern Cheyenne Reservation boomed. The real value of coal production expanded 12 fold; the real value of oil production grew 4 fold, and an export-oriented electrical energy generating complex was built at Colstrip. Mineral extraction jobs expanded 6 fold and the payroll associated with them grew 10 fold.[8] Construction to build the coal mines, the electricity generating facilities, and related homes and businesses caused construction jobs to expand 7 fold and their payroll 12 fold.[9] In Rosebud County, where the Colstrip generators were located, public utility and transportation jobs also increased substantially. Overall, the energy-related jobs expanded 7.5 fold and their payroll grew 9 fold. As a result the share of total jobs located in these energy-related sectors grew from 8 percent in 1972 to 38 percent at their peak in 1982. Real labor earnings in these energy-related sectors grew from 14 percent of real earnings to 64 percent. At the end of the study period, 1990, the energy-related jobs still represented 22 percent of total employment and 40 percent of total earnings. The difference between these two percentages is due to the high pay associated with those jobs. See Table 3-10.

[8] All of the dollar values are expressed in year 2000 constant dollars so that they can be compared to contemporary purchasing power. The Personal Consumption Expenditure Price index was used to remove the effects of inflation. The data on coal and oil production come from the Montana Department of Revenue's Biennial Reports. The data on electricity production comes from the U.S. Department of Energy's Energy Information Administration

[9] Employment and "payroll" data come from the U.S. Department of Commerce's Regional Economic Information System (REIS) that provides employment and labor earnings by county. For years when data was not reported to protect against disclosing individual firm data, it was approximated by extrapolating from the data that was reported.

Table 3-10
Direct Economic Impact of Mineral Extraction
in the Northern Cheyenne Reservation Area
(Rosebud, Big Horn and Powder River Counties)
1972 - 1990

Economic Impact	1972	Peak Year	1990
Real Value of Coal Production Coal	 $56,000,000	1984 $688,000,000	 $489,000,000
Value of Oil Production Oil	 $84,000,000	1981 $318,000,000	 $31,000,000
Real Value of Electricity Generated Electricity		1985 $405,000,000	 $405,000,000
Mineral Extraction Jobs Real Payroll	 278 $10,000,000	1981 1,615 $104,000,000	 1,133 $66,000,000
Pubic Utility, Transportation & Communications (Rosebud Co. Only) Jobs Payroll	 30 $3,800,000	1988 931 $45,300,000	 898 $47,100,000
Total Direct Economic Impacts Jobs Payroll	 695 $29,900,000	1982 5,214 $277,400,000	 2,526 $128,200,000

Sources: Montana Department of Revenue Biennial Reports, U.S. Department Commerce's Regional Economic Information System; U.S. Department of Energy, Energy Information Administration.

Clearly energy development between 1972 and 1990 led to a major expansion in economic activity and created a tremendous amount of wealth. In addition to mineral value extracted and the electricity produced, the four electrical generating plants at Colstrip were constructed, and, of course, are still operating. In year 2000 dollars, those generating facilities were assessed as worth $2.2 billion when they were completed in the mid-1980s.[10]

The gross dollar value of the energy production was huge. Expressed in constant year 2000 dollars, coal, oil, and electricity production between 1972 and 1990 had a cumulative value of over $16 billion. The annual production value was about $900 million. Associated with the coal production was a severance tax that totaled $1.8 billion during this time period, generating about $95 million per year for State government. See Table 3-11.

[10] Montana Department of Revenue Biennial Reports.

Table 3-11
Energy Wealth Created in the Northern Cheyenne Reservation Area
1972 - 1990

Type of Mineral Wealth	Rosebud Co. ($ millions)	Big Horn Co. ($ millions)	Powder River Co. ($ millions)	Three County Area ($millions)
Coal: Cumulative Real Value **Coal:** Average Annual Real Value	$3,108 $164	$6,049 $318		$9,158 $482
Electricity: Cumulative Real Value **Electricity:** Average Annual Real Value	$3,925 $245			$3,925 $245
Oil: Cumulative Real Value **Oil:** Average Annual Real Value	$800 $42		$2,303 $121	$3,103 $163
Total Cumulative Value: Coal, Elec., Oil Average Annual Value: Coal, Elec., Oil	$7,833 $451	$6,049 $318	$2,303 $121	$16,186 $$890
Coal: Cumulative **Severance Tax** Coal: Average Annual **Severance Tax**	$602 $32	$1,204 $63		$1,807 $95

Note: Values are expressed in constant year 2000 dollars.
Sources: Montana Department Revenue Biennial Reports, U.S. Department of Energy, Energy Information Administrator.

2. Mineral Wealth Remaining in the Local Area.

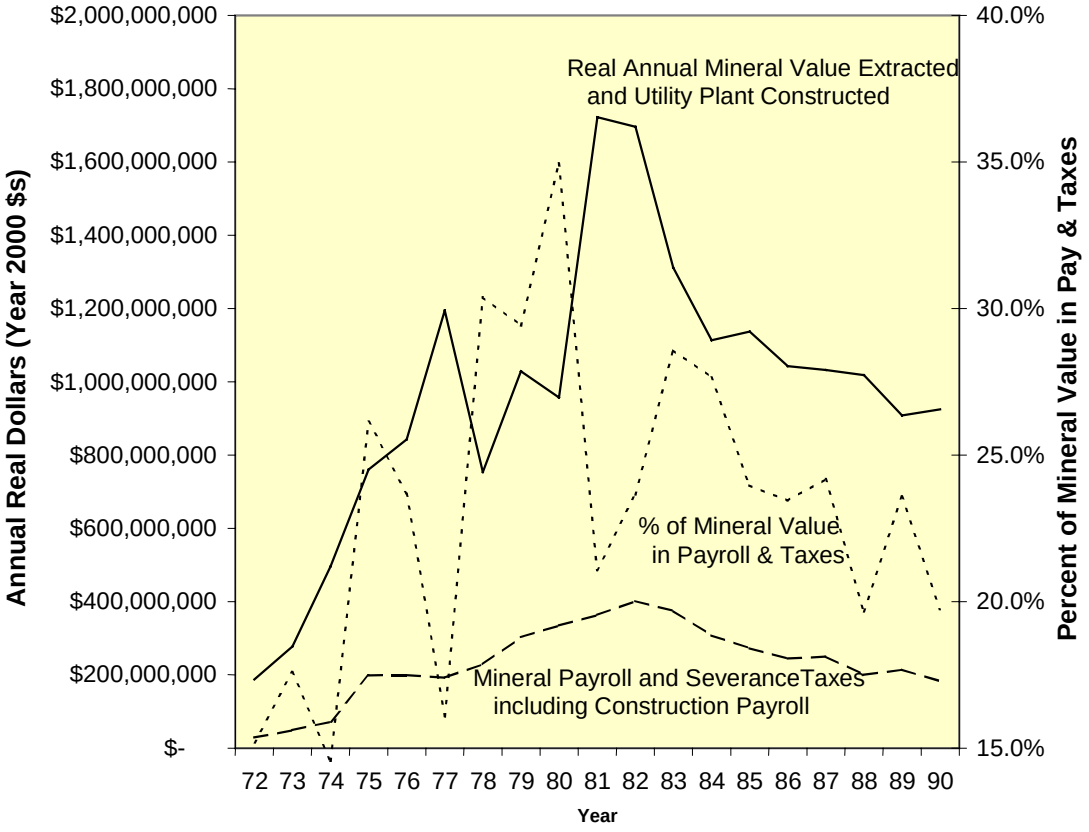
The primary "local" economic impact that mineral development has is the creation of jobs and the payment of wages. In addition, the State of Montana levies taxes on mineral extraction and local governments also levy property taxes or other mineral taxes.

When studying local economic impacts, it is important to focus on these actual local impacts rather than on the dollar value of the minerals extracted or electricity produced since much of the mineral value does not remain in the local area. In general only a relatively small fraction (20 to 25 percent) of the value of the minerals produced becomes income to local residents.

"Local" is used here loosely because workers in energy industries often commute long distances to their jobs and may not live in the rural counties where the mineral development is taking place. For instance, many of the workers associated with coal development in Big Horn County actually live in the Billings area (Yellowstone County). Many of the construction workers who built the strip mines and the electric generators and the workers who drilled the oil wells were not permanent residents of the region. For that reason, much of the payroll associated with these activities did not circulate within the local economy. Since it is difficult to estimate these payroll dollars that were generated by local economic activity but then flowed quickly out of the area, we will label them all "local" impacts.

A crude indication of the share of the total wealth created during the 1972-1990 energy development in the region surrounding the Northern Cheyenne Reservation that stayed in the "local" economy can be obtained by comparing the total real value of the mineral-related wealth created to the real pay received by workers and the coal severance tax received by the state government. Figure 3-11 compares these two.[11]

Figure 3-11: Real Value of Mineral-Related Production and Local Income Received: Northern Cheyenne Reservation Region



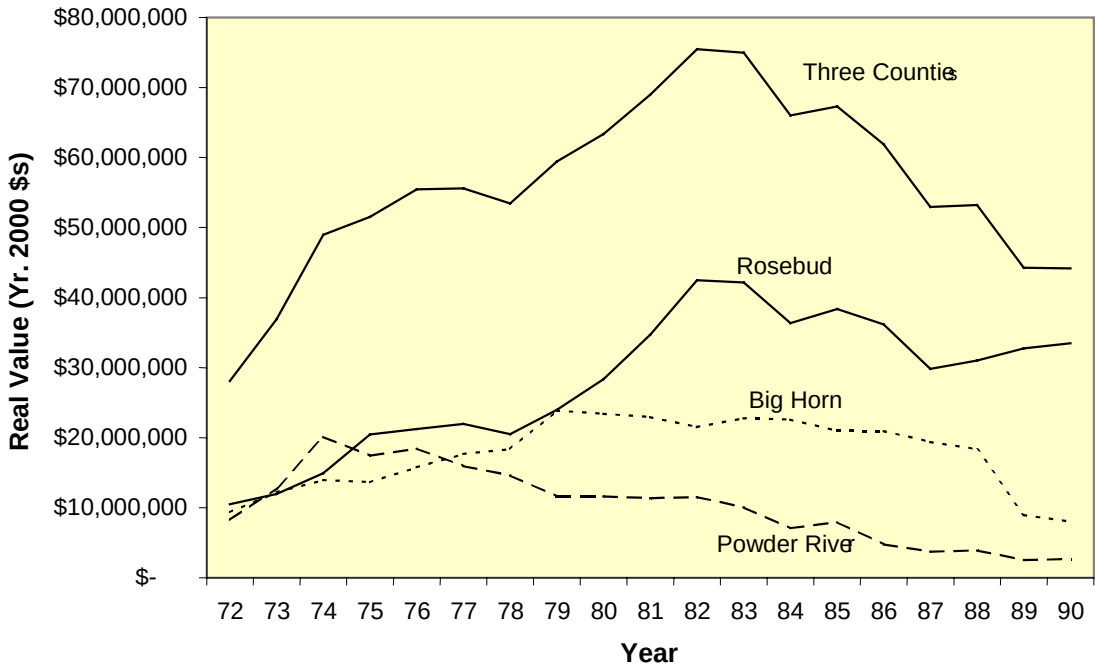
Only in the years of heavy construction on the Colstrip generating units in the early 1980s did the share of the wealth being created that was paid out in local wages approach one–third. In most years it was in the 20 to 25 percent range.

In addition to the coal severance taxes reported on in Figure 3-11, mineral producers also pay property taxes on the equipment they use and, until the late 1980s, on the economic value being generated by the mineral site. Because it is difficult to establish the value of a mineral deposit in place, local governments were allowed to

[11] Sources: MT Dept. Revenue Biennial Reports (value of construction, mineral production value, and mineral taxes), U.S. Dept. Comm. Regional Economic Information System (pay); U.S. Dept. Energy, Energy Information Administration (electricity production).

apply their property tax level to the net proceeds of mineral developments. Although this was not really a property tax, it was treated as such.[12] As mineral development expanded during the 1970s and 1980s in the region surrounding the Northern Cheyenne Reservation, total property tax collections also expanded in real terms. In Rosebud County, where the Colstrip power plants were built as well as the coal mines and oil wells developed, property tax collections in the mid-1980s rose to four times their level in 1972 and then declined to three times that earlier level. In Big Horn County property tax collections rose to 2.5 timers the 1972 level before falling back to 1972 levels. In Powder River County where oil development was already under way in 1972, property taxes more than doubled but then fell off to less than half of what they had been in 1972.[13] See Figure 3-12.

Figure 3-12: Real Property Taxes Levied for All Purposes in Three County Northern Cheyenne Reservation Region



[12] In the late 1980s this "property tax" was replaced with a "local government severance tax" to allow local government to continue to receive tax revenues from producing mineral sites, but the tax is no longer labeled a "property tax."

[13] These property tax collections include taxes collected within the county for all purposes including those levied for the state government, those levied for school districts, etc. They are not just the taxes levied by the county governments themselves. Source: Montana Department of Revenue Annual Reports, deflated using the personal consumption expenditure price deflator.

Some of the property taxes collected within each county flow to State government to fund school districts across the state. Not all of the property tax dollars are spent within the county where they are collected. If, instead of focusing on property tax revenues, we look at general revenues collected by local governments from their own tax and revenue sources, we may have a better indication of the way in which energy development supported local government activities and expenditures. Table 3-12 provides this information on a per person basis with the effects of inflation removed. Expressing the local government revenue data on a per person basis allows revenues to be assessed on the basis of the number of people served. Expressed this way, the government revenues per capita indicate how the capacity of local government to support the total population with services has changed over time.

Table 3-12
Real General Revenues per Capita from Own Tax and Revenue Sources
All Local Governments in County

Year	Big Horn	Powder River	Rosebud
1966 - 67	$782	$1,059	$1,221
1976 - 77	$2,347	$4,282	$4,245
1986 - 87	$2,206	$2,897	$8,948
1991 - 92	$1,565	$9,387	$6,876

Note: Northern Cheyenne Tribal Government Not Included.
Source: Census of Governments; Year 2000 Constants.

As can be seen, energy development allowed local governments to significantly increase their general revenues per capita. All of the increase was not sustainable, but at the end of the study period real per capita local government revenues were double what they had been before energy development in Big Horn County. In Rosebud County where the Colstrip power plants provided a relatively permanent addition to the local property tax base, the real revenues per capita were more than five times what they had been in the late 1960s before energy development. Powder River County showed the greatest increase in per capita local government revenues per capita. This was due to a large increase in non-tax revenues to the local government.

3. The Impact of This Energy Development on the Northern Cheyenne Reservation.

Despite the creation of billions of dollars of wealth and thousands of high-paid jobs, the energy boom of the 1970s and 1980s in the region surrounding the Northern Cheyenne Reservation did not support improved prosperity on the Reservation. Between 1970 and 1990 real median family income on the Reservation declined from $17,800 to $15,950 in 1980 and declined further, to $14,800 in 1990, an overall decline

of almost a sixth.[14] Off the Reservation in Rosebud County median family income increased from $20,700 to $39,300, almost doubling. In 1970 the Northern Cheyenne Reservation had a median family income that was 86 percent of that of off-Reservation Rosebud County.[15] By 1990 the Reservation median family income fell to only 38 percent of that found off the Reservation in Rosebud County.

Although real per capita income on the Northern Cheyenne Reservation improved somewhat over the 20-year period, 1970 to 1990, it declined relative to Rosebud County as a whole, from 52 to 48 percent of the county-wide level. While real per capita income on the Reservation increased by 27 percent, that of people living off the reservation in Rosebud County increased by 40 percent.

During this boom in energy-related employment opportunities, the percentage of working age residents of the Reservation who were not employed increased and the official unemployment rate almost tripled from 5.9 to 16.9 percent.[16] Relative to Rosebud County as a whole, these employment statistics also deteriorated.

Despite the $2.3 billion of additional energy industry real payroll generated between 1972 and 1990 in the surrounding three counties (an average of $120 million per year) the poverty rate on the Northern Cheyenne Reservation increased from 41 to 48 percent. For Rosebud County residents living off the Reservation the poverty rate declined from 20 to 10 percent. The percent of Reservation residents living below the poverty level rose from twice that of the Rosebud County residents living off the Reservation to almost five times (4.7x) that of non-Reservation residents.

The generation of billions of dollars of energy wealth did not translate into the accumulation of wealth on the part of Reservation residents. Home ownership rates on the Northern Cheyenne Reservation fell between 1970 and 1990 from 78 percent to 59 percent. Relative to Rosebud County as a whole, the Reservation went from being 37 percent above the county home ownership rate to being 15 percent below it.

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[14] 1970, 1980, and 1990 Census of the Population. The 2000 Census data on socioeconomic characteristics is not yet available.

[15] The estimate for non-Reservation Rosebud County was based on the assumption that the economic characteristics of the Rosebud County part of the Northern Cheyenne Reservation were similar to those of the Reservation as a whole. 70 to 75 percent of the Reservation population, families, etc. are located in the Rosebud County part of the Reservation. In addition, because the 1970 Census did not report separately on the Rosebud and Big Horn County portions of the Reservation, the 1980 division of the Reservation population between the two counties was used.

[16] The official unemployment rates are substantially lower than those reported in the BIA Labor Force Reports for the same years. This is likely attributable to the fact that the methodology for calculating the official unemployment rate, unlike used by the BIA in its Labor Force Reports, does not count discouraged job-seekers as part of the work force.

Tables 3-13 and 3-14 below summarize the changes that took place on the Northern Cheyenne Reservation and in Rosebud County as a whole. It documents the startling fact that despite major energy developments in the surrounding region, economic conditions deteriorated on the Reservation in both absolute and relative terms. Whatever happened to the mineral wealth created, it did not flow to residents of the Northern Cheyenne Reservation.

Table 3-13
Changes in Economic Conditions on the Northern Cheyenne Reservation
During the Energy Boom 1970 - 1990

Economic Indicator	1970 Census	1980 Census	1990 Census
Employment Status			
%Working Age Not Employed	54.6%	53.7%	56.2%
Official Unemployment Rate	5.9%	8.6%	16.9%
Real Income ($1990)			
Median Family Income	$17,833	$15,946	$14,815
Per Capita Income	$3,899	$4,290	$4,970
Poverty Rate			
% of all Persons below Poverty	40.7%	41.8%	48.2%
% of all Families below Poverty	39.8%	41.7%	43.8%
Home Ownership Rate	77.7%	63.8%	58.7%

Source: Census of Population 1970, 1980, 1990.

Table 3-14
Northern Cheyenne Reservation as % of Rosebud County
Changes in Economic Conditions During the Energy Boom 1970 - 1990

Economic Indicator	1970	1980	1990
Employment Status			
%Working Age Not Employed	127%	143%	147%
Official Unemployment Rate	216%	243%	206%
Real Income ($1990)			
Median Family Income	90%	47%	45%
Per Capita Income	52%	41%	48%
Poverty Rate			
% of all Persons below Poverty	158%	232%	236%
% of all Families below Poverty	220%	318%	302%
Home Ownership Rate	137%	94%	85%

Source: Census of Population 1970, 1980, 1990.

The limited employment and income opportunities on the Northern Cheyenne Reservation during these decades of energy development were not due to faster population growth on the Northern Cheyenne Reservation compared with the rest of Rosebud County. During the 1970 –1990 period the population of the Rosebud County

portion of the Reservation grew by 61 percent while that of the rest of Rosebud County grew by 79 percent. During the first decade of this period, the Rosebud County part of the Reservation grew by 30 percent while the rest of Rosebud county grew by 82 percent. During the second decade, the Rosebud part of the Reservation continue to grow at a slightly low rate (24 percent for the decade) while the rest of the County saw population decline slightly (2 percent) as the Colstrip construction ended and that workforce dispersed.

Although the Reservation population was growing more slowly than the off-Reservation area, employment opportunities were growing even more slowly, leaving a larger and larger portion of the Reservation population out of the workforce and depressing median income. While employment in Rosebud County expanded 85 percent between 1970 and 1980, employment on the Reservation grew only 28 percent. For the two-decade period, Rosebud County employment expanded 94 percent while Reservation employment expanded 73 percent.

During the decade of the 1980s, the "boom" portion of the energy expansion ended. The huge construction force working on the Colstrip power plants was no longer needed and growth in employment in mining, electric generation, and transportation ended. During that decade, census data indicates that employment in Rosebud County increased by only 217. Other federal data indicates that wage and salary employment in 1987 was almost the same as it was in 1980. During this period, however, the number of "working age" (16 and older) residents of the Northern Cheyenne Reservation increased by 692. Although employment on the Reservation increased by 262, the number of those 16 and older who were not working rose by 434. This suggests that one source of the depressed income and employment on the Reservation is that the Reservation workforce expanded significantly just as employment in some energy sectors fell dramatically and in other sectors stopped growing. But, as will be seen below, another part of the problem also appears to have been lack of access of Reservation residents to the higher paid energy-related jobs.

4. Changes in the Structure of Employment on the Northern Cheyenne Reservation

The expansion in energy development in the region surrounding the Northern Cheyenne Reservation created many very high paying jobs. Mining jobs paid $50,000 to $65,000. Jobs associated with electric generation and transportation paid $40,000 to $50,000. Construction jobs at their peak during the construction of the Colstrip generating facilities paid over $50,000.[17] Table 3-15 below shows real average annual pay in different industries in Rosebud County during the 1970-1990 period.

[17] U.S. Dept. Comm. Regional Economic Information System. Calculated by dividing labor earnings by number of jobs to estimate annual pay per job.

Table 3-15
Real Pay per Job in Rosebud County, Montana

Industry	1973	1980	1990
All Jobs	$27,513	$27,803	$28,768
Mining Jobs	$52,385	$64,426	$58,718
Public Utility and Transportation	$40,119	$44,209	$52,496
Construction	$31,096	$41,934	$34,287
Manufacturing	$17,449	$34,713	$16,969

Source: U.S. Dept. Comm. BEA, REIS, 1999 dollars.

In 1980 on the Northern Cheyenne Reservation, the population 16 years and older (the "working age" population) was the equivalent of 25 percent of this age cohort in Rosebud County.[18] 1980 Census data indicates that Reservation residents held none of the mining jobs, 8.7 percent of the public utility and transportation jobs, and 8.3 percent of the construction jobs. The Census data indicates that while 261 new mining jobs were created between 1970 and 1980, *none* of them went to Northern Cheyenne Reservation residents. Of the 420 public utility and transportation jobs created between 1970 and 1980, only 14 or about 3 percent went to Reservation residents. Of the 496 new construction jobs created, only 32 or 6.5 percent went to Reservation residents.[19]

During the 1980s, Northern Cheyenne residents were somewhat more successful at finding jobs in energy-related industries, gaining 12 mining jobs, 70 jobs in public utility and transportation, and 52 jobs in construction, according to 1990 Census data. But even with these gains, in 1990, when the Reservation had the equivalent of a third of the "working age" population of Rosebud County, Reservation residents held only 3 percent of mining jobs and 8.5 percent of the public utility jobs, the two industries with the highest pay. In 1990 Reservation residents did hold 21 percent of the Rosebud County transportation jobs and 32 percent of the construction jobs. The relatively high paid construction jobs, however, had already disappeared. While average real pay in construction in 1983 was $52,000, in the late 1990s average annual construction pay in Rosebud County was only about $20,000. The same may be true of the transportation jobs: The new transportation jobs may represent trucking jobs (paying $30,000 statewide) rather than railroad jobs (paying $61,000 statewide).

[18] Part of the Northern Cheyenne Reservation is in Big Horn County. 25 to 30 percent of the Reservation population lives in Big Horn County. If the workers and the working age population are divided proportionately between Rosebud and Big Horn County, the analysis comparing the Reservation to Rosebud County will be approximately accurate.

[19] The Census employment numbers are below those indicated in the Regional Economic Information System maintained by the US Department of Commerce. As long as the undercount is consistent across industries the general conclusions discussed here will be accurate.

In explaining the deterioration in Reservation economic opportunities, however, it is also important to underline the overall failure to create employment opportunities for the Reservation's working age population. As pointed out above, the percentage of the working age population on the Reservation that was not employed rose slightly (from 55 to 56 percent) during 1970-1990 energy boom rather than declining (from 40 to 30 percent) as it did for the rest of Rosebud County working age population. As the Reservation working age population expanded between 1970 and 1990, 58 percent did not find jobs. For the rest of Rosebud County, only 16 percent of the expanded working age population failed to be employed.[20] Lack of employment opportunities across the board reduced the labor earnings available to support the Reservation's residents. While only a quarter of the Reservation population held jobs, 40 percent of the overall Rosebud County population was employed. This lack of employment and wage income depressed incomes in absolute as well as relative terms. While about the same percentage of households had wage and salary income in 1989 on both the Reservation and across Rosebud County as a whole (85 percent), the mean wage and salary income for Reservation households was only $17,500 while it was $29,500 for the county as a whole, 69 percent higher. Fewer people within the Reservation households were working and the pay received by those who were working was lower than experienced by those living off the Reservation.

D. Economic Decline on the Reservation Amidst an Energy Boom Off the Reservation.

As discussed previously, energy development in the region surrounding the Northern Cheyenne Reservation during the 1970s and 1980s created tremendous mineral wealth, led to the construction of major industrial facilities, and provided over a thousand very high paid jobs in mining, construction, public utilities, and transportation. Despite these dramatically positive economic impacts in the surrounding region, the economic characteristics on the Northern Cheyenne Reservation actually deteriorated during this very boom period with real median incomes falling and unemployment and poverty rates rising. Relative to the economic gains in the rest of Rosebud County, the deterioration of economic conditions on the Reservation was even more dramatic. The economic gap grew even larger.

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[20] These differences were partly due to the Northern Cheyenne Reservation having a larger percentage of its population in the "young worker" age category: 16-24. In 1980 about 18.6 percent of the Reservation population was in this age group versus about 16.3 percent of Rosebud County as a whole. Between 1980 and 1990, the percentage of the population in this age category declined in both the Reservation and the county, but much more dramatically in Rosebud County as a whole: 18.6 to 16.1 percent on the Reservation versus 16.3 to 11.8 percent in the county as a whole. While the number of 16-24 year olds increased by 72 on the Reservation, they declined by 387 in the county as a whole. Since this age group is more likely to be in school and not employed, this would contribute to the observed growth in the number of working age not employed. But the number of those 16 and older who were not working grew by 434 on the reservation between 1980 and 1990; the additional 72 in the 16-24 age category represent only about a sixth of these.

These contrasting economic trajectories on and off the Northern Cheyenne Reservation during the energy boom of the 1970s and 1980s calls out for explanation. If the forces that kept the Northern Cheyenne from benefiting from the earlier energy development are not understood, there is little likelihood that new energy development will benefit them either and could, again, leave them worse off.

There are four primary explanations for the deterioration of economic conditions on the Reservation during the past energy boom.

1. The lack of access by Northern Cheyenne to the higher-paid energy jobs;

2. The limited local commercial infrastructure on the Reservation;

3. The lack of access to mineral revenue to support public services and infrastructure on the Reservation; and

4. The impact of the Northern Cheyenne commitment to place.

1. Lack of Access by Northern Cheyenne to High-Paid Energy-Related Jobs.

As discussed above, although the Northern Cheyenne Reservation provided between a quarter and a third of the working-age population in Rosebud County, it gained only a very small fraction of the better-paid energy-related jobs: mining, public utility, railroad, and construction jobs. Instead of gaining access to 25 to 33 percent of these jobs, it received 3 to 8 percent of those jobs.[21]

This by itself meant that the vast majority of the direct impact of the energy boom, the payroll associated with energy-related jobs, bypassed the Northern Cheyenne Reservation. There were very few direct positive impacts on Reservation earnings.

2. Limited Local Commercial Infrastrucure on the Reservation.

The local economic impacts of changes in the economy are usually analyzed using the concept of the "economic base." Certain types of export-oriented economic activities, like coal mining, put people to work and in the process inject income into the local economy where that income circulates among local businesses putting additional people to work as the money is spent and re-spent. The total impact is larger than the initial payroll's direct impact to the extent that the local economy is able to capture and hold those dollars in local businesses before they "leak out" to pay for purchases from

[21] As discussed earlier, even the jobs that residents of the Reservation obtained may have been at the lower end of the pay scale. Data on the income associated with the jobs taken by Reservation residents are not available.

outside of the local economy. A "multiplier" is used to summarize the amplified impact that the income injected in from the outside has on the local economy.

This economic base view of the local economy has two parts: The export-oriented activity that injects income into the local economy from the outside and the capacity of the local economy to capture and hold those dollars. The more complete the local economy is in terms of providing goods and services to its residents, the larger is the multiplier impact and the greater is the impact associated with each dollar injected into the local economy.

A small local economy that provides very few goods and services to its residents, leaving them to purchase those goods and services from outside sources, will see whatever dollars are injected into the local economy leak out almost immediately, providing almost no local economic impact beyond the pay earned in the export-oriented business.

This is one of the problems faced by the Northern Cheyenne Reservation. The 1980 Census did a special expanded survey of residents of the nation's Indian reservations that not only asked in what industry residents worked but also whether that work took place on the reservation. That data for the Northern Cheyenne Reservation indicated that 9.8 percent of the population worked in the locally-oriented business sectors, trade, service, and finance, on the Reservation. Federal data for the same year indicated that jobs in these same sectors in Rosebud County as a whole represented 20.4 percent of the population, over twice as great a percentage.[22] That by itself would suggest that the off-Reservation part of Rosebud County would receive much more of the indirect and induced benefits associated with the energy industry payrolls than would the Reservation.

As energy development took place in the region surrounding the Northern Cheyenne Reservation, the Reservation did not have a local economy that was able to derive the local economic benefits associated with the new dollars that were being generated. As the Colstrip and other urban economies in the region expanded because of those new energy dollars, they provided a more attractive and competitive set of goods and services than found on the Reservation. In that sense, the expanded set of businesses off of the Reservation tended to draw even more dollars away from businesses located on the Reservation. Rather than gain from the increased levels of income and expenditure, the Reservation declined in terms of its commercial rank within the regional economy.

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[22] The federal data is from the US Department of Commerce, Regional Economic Information System (REIS). It is possible that the Census data and RIES data are not completely consistent with one another. If, instead, the Reservation Census data is compared to the Census data for Rosebud County as a whole, the locally oriented sectors represented 16 percent of the population, still 63 percent above the Reservation figure. If the Reservation is compared to the non-Reservation part of Rosebud County, the off-reservation area had 17.4 percent of its population employed in the local sectors compared to the 9.8 percent on the Reservation.

In 1996-1997 both businesses and households on the Northern Cheyenne were surveyed to determine what local businesses existed that could help capture and hold Reservation income and to determine where Reservation residents actually spent their income.[23] Those survey results are reported more fully in Appendix A. These surveys confirmed there was only a very limited local economy on the Reservation and the bulk of the purchases made by Reservation residents took place off of the Reservation.

The range of Reservation businesses in 1997 was very limited. Included were the following retail businesses:

1 restaurant
2 grocery stores
3 convenience stores
1 coffee shop
2 hair salons
1 video store
2 arts and crafts businesses
1 laundromat.

In addition, there were the following construction-type businesses:

2 construction companies
1 backhoe company
1 pump / well business
1 painting business.

There was also a home health care business and a child services business. Finally, there were, of course, ranching operations and a trail riding operation.

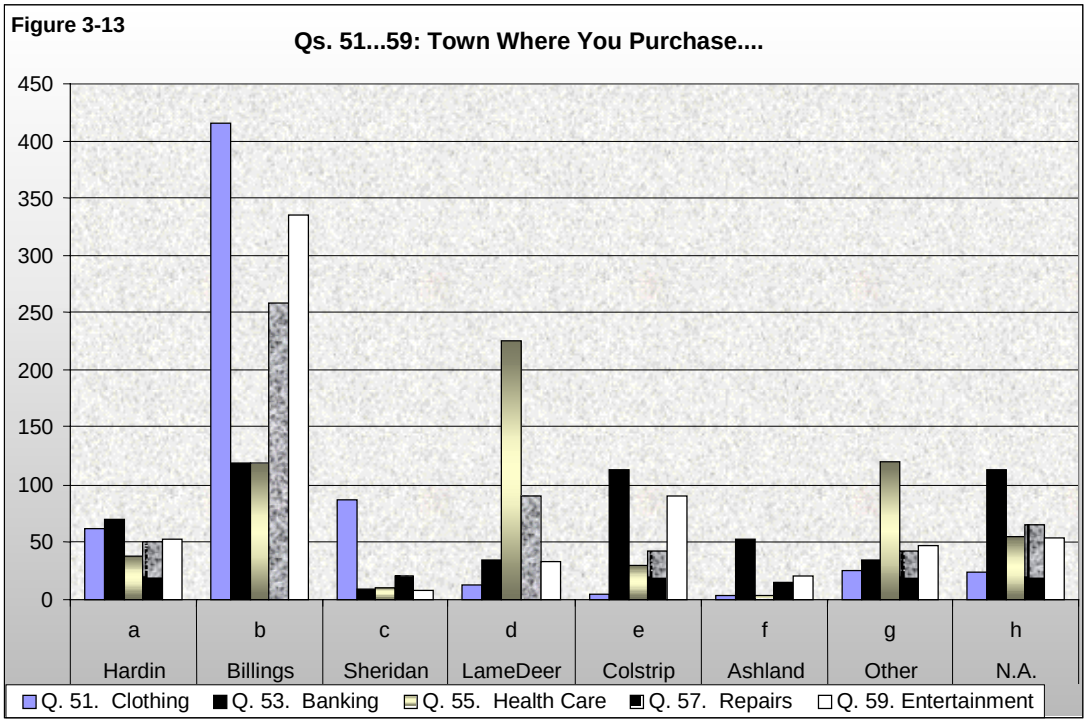
Not surprising given the limited range of goods and services available on the Reservation, most residents did their purchasing off the Reservation, primarily in the largest trade center in the region and state, Billings. The ongoing growth of the Billings' trade and service infrastructure, the new "big box" "warehouse" retail trade stores, the new entertainment opportunities (multiplex theaters, restaurants, etc.), specialized "niche" stores, multi-brand automobile dealerships, etc. provides increasingly stiff competition to smaller towns including those on the Reservation. Table 3-16 and Figure 3-13 show that Reservation residents predominantly shop at off-Reservation establishments.

[23] Community and Economic Development Survey and Reservation Business Survey conducted for Native Action, Lame Deer, Montana.

Table 3-16
Location of Reservation Resident Expenditures
1996 - 1997

Item	Off-Reservation Locations	On-Reservation Locations
Q. 43. Groceries	478	195
Q. 45. Furniture	443	29
Q. 47. Vehicles	443	18
Q. 49. Appliances	445	37
Q. 51. Clothing	507	17
Q. 53. Banking	335	88
Q. 55. Health Care	305	228
Q. 57. Repairs	394	106
Q. 59. Entertainment	526	54

Figure 3-13



The combination of the lack of access to the high-paid energy-related jobs, lack of local economic development on the Northern Cheyenne, and the rapid expansion of the retail trade and service sectors in the major trade center, Billings, had a cumulative negative impact on the Northern Cheyenne's ability to derive benefits from the surrounding energy development: The direct impact in terms of access to high paid jobs was very small. Then there was little or no indirect or induced impact because there are no substantial trade centers on the Reservation. Finally, the businesses on the

Reservation found themselves at an increasing competitive disadvantage compared to the growing trade center within the region.

3. Lack of Access to Energy Revenues to Support Public Services and Infrastructure.

Rosebud County, the City of Colstrip, the State of Montana, and the Federal government all were able to gain access to a significant amount of energy-related revenues through mineral taxation and the sharing of royalty revenues. These governments could use those mineral revenues to expand the services provided to citizens and businesses, improve schools and other public facilities, and finance various economic development and citizen support programs.

The Northern Cheyenne Tribal Government did not have access to a share of those mineral revenues. While other governments were improving their cities and towns and trying to stimulate balanced economic development, the Northern Cheyenne could not do the same. This too put the Reservation at a competitive economic disadvantage. Steps that the Tribal Government might have taken to increase the likelihood that some of the benefits associated with regional energy development would flow to and stay on the Reservation could not be funded. In that sense, the Reservation could not act to take advantage of the new economic opportunities that surrounding energy development provided.

4. Impact of the Northern Cheyenne Commitment to Place.

To the Northern Cheyenne the Reservation is not just a convenient location temporarily chosen because of the economic opportunities in the area, but the Tribe's permanent homeland. Tribal members over many generations have contributed substantial resources to the protection and integrity of this homeland.

This commitment to place can be contrasted with the large, mobile, workforce that helped construct the coal mines, the Colstrip power plants, and the oil fields. Those workers came for the well-paid jobs that were available and, when those jobs ended, they traveled on to other places in the pursuit of new economic opportunities. Many of those still holding jobs in the region surrounding the Northern Cheyenne Reservation also migrated in to take the jobs that were proliferating while the energy boom was still underway. Even now, as some of those jobs are lost, the workers move on to other areas looking for new jobs.

This is partly what has allowed Rosebud County to maintain relatively high average incomes and low unemployment rates even though thousands of jobs have been lost during the 1980s and 1990s as various phases of the energy boom subsided. Out-migration is the "safety valve" that prevents wages and incomes from being depressed and unemployment rates from skyrocketing.

For the Northern Cheyenne this is not an acceptable solution to low pay and employment opportunities even though limited economic opportunity does ultimately force a certain amount of out-migration from the Reservation. The Northern Cheyenne are committed to making the Reservation a viable homeland for their people, economically as well as culturally, socially, and environmentally.

That complicates the economic challenges the Tribe faces. The quiet out-migration of families and individuals that has allowed many regions to adjust to economic change is not an acceptable option to the Tribe. This makes the first three problems outlined above all the more damaging and their solution all the more important.

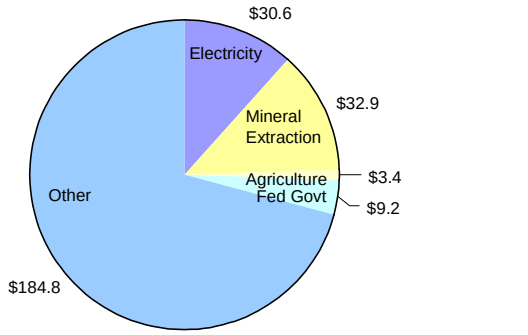
E. Contribution of Northern Cheyenne-Related Expenditures.

As discussed more fully in Chapters 4 and 5, the presence of the Northern Cheyenne Tribe and Reservation in the region, has led to a substantial flow of federal and other dollars into the region associated with a broad range of Tribal and other government agency programs as well as programs sponsored by the St. Labre Mission. Because these dollars flow in from outside the region, largely as a result of federal and grants and private charitable contributions, Northern Cheyenne-related income flows are part of the regional economic base. They represent income that is injected into the local economy that then circulates within the local economy putting additional people to work and generating additional income.

The vast majority of most Northern Cheyenne-related program expenditures take the form of wage and salary payments to people who live within the region. The exceptions to this are those Tribal programs, such as housing, that involve construction of new facilities. Construction projects, besides involving the hiring of buildings trades workers, design staff, and supervisory and administrative personnel, also involve the purchase of building materials many of which are likely to be imported from outside the region (e.g. household heating and plumbing equipment). Some of the St. Labre Mission direct-mail activities may also involve expenditures on professional assistance and services outside of the region. Dollars expended outside the region do not have a stimulating impact on the local economy.

As indicated in the tables and discussions in Chapter 4 and 5, Federal, State and Tribal government expenditures on the Reservation may total as much as $45 million in fiscal year 2002. In addition, the St. Labre Mission expends another $25 million, much of which is at least ostensibly intended to benefit the Northern Cheyenne. (Yarlett, 1-10-2002). About $60 million of the estimated total of $70 million appears to have been paid out for wages and salaries and locally purchased goods and services. This represents a huge income flow for the rural area surrounding the Northern Cheyenne Reservation. In 1999, the latest year for which detailed income information is available, total wage and salary income in Rosebud County was about $128 million. In the three county area, it was $244 million. Clearly the Tribal-related expenditures represented a considerable share of those totals. See Figure 3-14.

Figure 3-14
1999 Sources of Income, Rosebud County
($ millions)



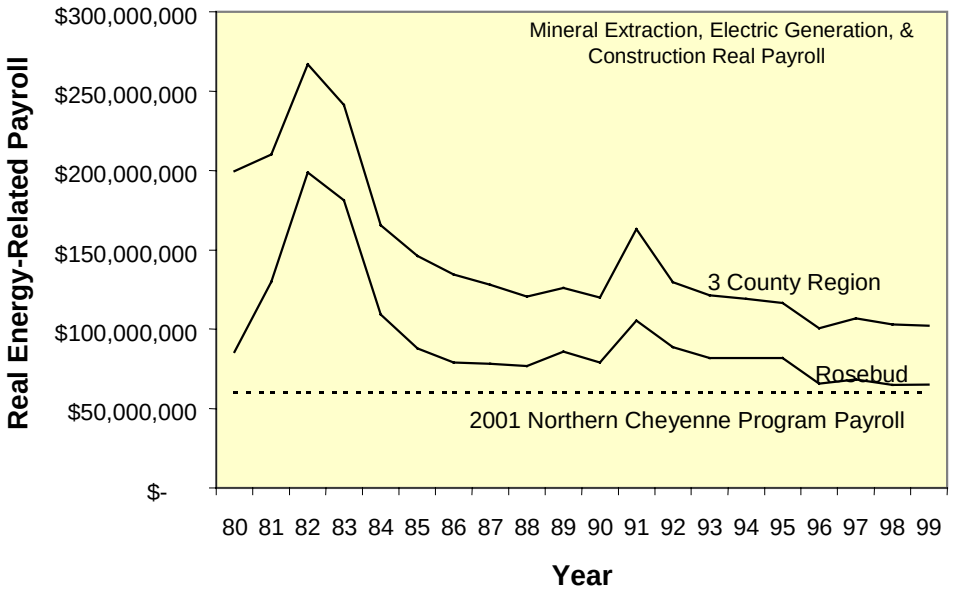
For Comparison: 2001 Northern Cheyenne Related Expenditures: $60 Million

During 1999, the electricity producing and mineral extraction industries paid salaries totaling $63.5 million in wages and salaries in Rosebud County and $96.2 million in the three county region. In terms of total earnings, the expenditures associated with Tribally-related programs rivaled the energy industry in terms of relative size.

Ironically, even though the broad array of programs run by and for the Northern Cheyenne Tribe and its members are intended to allow them to meet their basic needs, assist in the creation of a viable Reservation economy, and support the Tribe as a sovereign people, much of the economic benefit of these programs flows off of the Reservation to the economies of the region surrounding the Reservation. Because of the limited set of businesses and economic activities found on the Reservation, the funds supporting these Tribally-related program quickly “leak” off of the Reservation to businesses in the adjacent urban areas. The “ripple” or “multiplier” impacts flow largely to non-Reservation businesses and workers.

Nevertheless, given the ongoing decline in payroll associated with energy development in the Northern Cheyenne region, the income associated with Tribally-related programs has become more and more important to the regional economy. See Figure 3-15.

Figure 3-15
The Decline in Energy Related Real Payrolls in the Three-County Northern Cheyenne Region



IV. Socio-Economic Importance of the Cheyenne Subsistence Activities.

Unemployment rates, mean annual income and so on are routine measures used to describe participation in the national market based economy. However, they give only a partial picture of Reservation economies. For example, a study of the White Earth Chippewa clearly demonstrates that a "high unemployment rate" does not mean people do not work.

While unemployment on the White Earth Reservation was listed by the Department of Labor at approximately 75 percent, most people were "employed" in a land based economy. Over 75 percent harvest one or more deer annually, 65 percent harvest ducks, geese, or small game, 35 percent harvest twenty-five or more fish annually, 45 percent harvest wild rice (for own use, and for sale of excess), and berries or medicines. 62 percent had gardens, 58 percent had been sugarbushing (maple syrup making), and over 45 percent produced handcrafts for their own use and for sale. Overall in many Native communities the traditional land-based economy, and in fact this way of life, remains a centerpiece of the community. (Whaley and Bressete, 1994: xviii).

The high unemployment rate of the Northern Cheyenne should likewise not be confused with not working. Feeney (1986) noted the continuing economic and social significance of hunting, gathering and fishing to the Northern Cheyenne. This has not changed. In early 2002, the Northern Cheyenne conducted a survey on the traditional economy and subsistence patterns on the Reservation. The survey involved interviews

with 112 people, 38 female and 64 male, ranging in age from 16 to 91. Interviewees were drawn from all districts of the Reservation (Lame Deer District 46; Muddy District 11; Busby 16; Birney 19; and Ashland 20).

Over 95 percent of those interviewed consider themselves to be a hunter, fisher, berry picker and/or gatherer of food plants. In terms of hunting 84 percent hunted on the Reservation while only 30% hunted off Reservation. Survey respondents hunted deer, elk, bear, bobcat and coyotes as well as smaller game, including rabbits, ground hogs, wood chucks, porcupine and prairie dogs. In addition they hunted a variety of birds including sage hen, grouse, quail, pheasants, turkeys, hawks and prairie chickens. Deer were the most commonly sought big game and pheasants the most commonly sought bird.

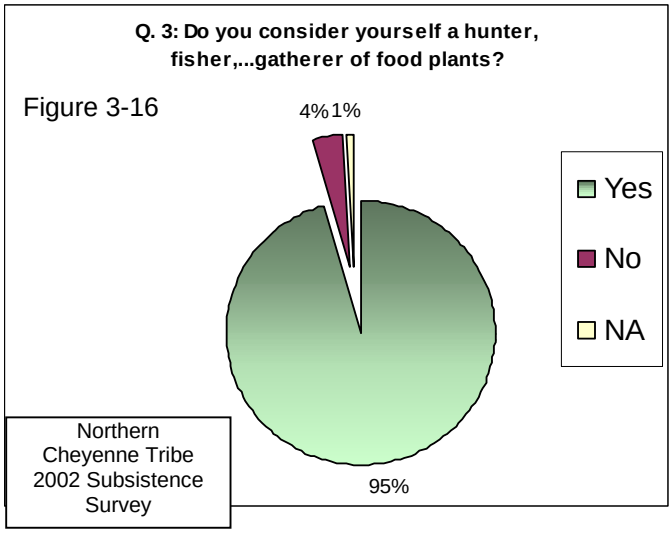


Figure 3-16

Sixty percent of the people interviewed fished last year in the Tongue River or in the Reservation lakes and ponds. They caught bass, trout, catfish, suckers, pike and bottom feeders.

People hunted, fished and gathered these traditional foods not only for themselves but also to share with others. Over 85 percent shared with other members of their household, 58 percent with relatives in other households and 62 percent with tribal elders or others who need meat.

Traditional respect for the game was still evident in people's hunting, gathering and fishing behavior. Over 63 percent reported eating a piece of raw liver, heart or kidney after their first kill. About 86 percent reported sharing their first kill and over 76 percent reported praying or offering ceremony before and/or after hunting, fishing or gathering. Eighty-nine (89) percent said dry meat, berries and other wild plant foods were part of their diet and 76 percent reported that they used part of animals or birds for ceremonial or social purposes. Eighty-eight (88) percent reported gathering wood for personal use.

Eighty-nine (89) percent of the people interviewed gathered berries, mushrooms, turnips, carrots, onion, asparagus or tea for food in 2001. Furthermore, over 84 percent gathered sage, cedar, roots, willows, sweet grass, thrush, chokecherry branches, ash trees, cottonwood or other plants for medicines or ceremonies. Over 90 percent of the people interviewed ranked wild game and plants as very important to their social way of life, their economic way of life and their spiritual way of life in the Cheyenne community.

Ninety-seven percent of the Cheyenne interviewees said that springs have spiritual value. Over 90 percent said that water is very important to the Reservation's social, economic and spiritual way of life. Finally about 74 percent reported collecting clay/pigments (red pigments), which are necessary for tribal ceremonies.

Clearly traditional economic activities continue to be important to the Northern Cheyenne today. Ongoing participation in the traditional seasonal round is an important part of Tribal cultural identity. Continuing to hunt, fish and gather contributes to people's diets and allows them to meet traditional social and ceremonial obligations within their community. It also reflects a deep and abiding respect for the natural beauty and resources of the region and the Northern Cheyenne homeland.

The cultural significance of gathering, hunting and fishing extends beyond the amount of food, craft materials and medicines procured. While hunting, fishing, and gathering, the Cheyenne are passing on their traditions. Parents or elders introduce their young people to the intimate environment of the Reservation, the Tongue River Valley, and the Custer National Forest as they experience these areas when they go hunting and gathering together. They recount their oral histories associated with particular areas or features, waterways, and plants and animals. By doing so, they pass on their way of life to their children and honor their elders and ancestors. They reaffirm their long-term commitment to the area in all its physical and spiritual aspects.

V. Health and Well Being on the Northern Cheyenne Reservation.

Health conditions on the Northern Cheyenne Reservation today are not as critical as they were two or three generations ago. People no longer die as a result of chronic semi-starvation and associated diseases at a rate faster than they are being born, as was true when the U.S. Senate Committee on Indian Affairs surveyed conditions on the Northern Cheyenne Reservation two or three generations ago in 1929, and for some time thereafter.

Figure 3-17
Death Rates by Various Causes
Enrolled Members of the Federally Recognized Indian Tribes
Compared to U.S. All Races
1995

- Alcoholism - 627% greater
- Tuberculosis - 533% greater
- Diabetes - 349% greater
- Accidents - 204% greater
- Suicide - 72% greater
- Pneumonia and Influenza - 71% greater
- Homicide - 63% greater

Source: Indian Health Service, *Trends in Indian Health* 1998-99, p.6.

But by any measure the health needs on the Northern Cheyenne Reservation still remain critical today. In all dimensions of health and well-being, adverse conditions among Northern Cheyennes still far exceed adverse conditions among whites in the U.S., in Montana, or in those of the counties neighboring the Reservation. Figure 3-17 above compares U.S. Indian death rates by various causes to comparable death rates for the U.S. population as a whole. Because of the problems of data availability discussed in this Report, we have not been able to obtain comparable figures specific to the Northern Cheyenne Reservation, but the aggregate data at least indicates the seriousness of the problems faced by reservation communities in the nation as a whole.

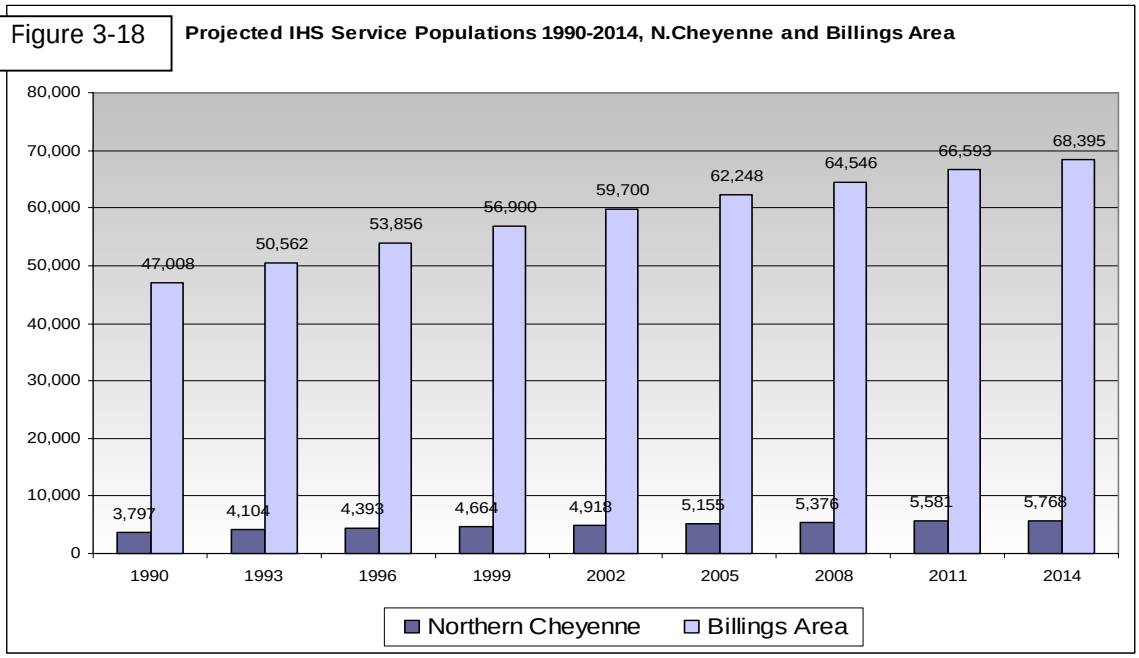
Health and well-being typically are measured along various dimensions, from death and birth rates, to the incidence of different diseases, to the prevalence of risk factors such as alcohol, obesity, smoking, and so on. Different such measures will be reviewed below.

Besides presenting important information about health conditions on the Reservation and pointing to key vulnerabilities in its population, the data reviewed below also continue to demonstrate the more general central themes of this Section. First, they reveal further dimensions of the Northern Cheyenne Tribe's unique presence within the region. They help define the Tribe as a distinct population, and reveal new facets of its identity as a particular social and governmental entity in relation to local neighboring counties, the state of Montana, and the nation. Second, like the other profiles of social and economic life on the Reservation presented in this Report, indices of health and well-being also need to be seen in context. The Reservation must be recognized as a distinct social and jurisdictional entity, but also as existing *within* its region and state and nation, and in dynamic relation with them. Finally, the following review also reveals the limitations of readily available current and comparable data for the Northern Cheyenne Reservation, with respect to various critical aspects of the health and well-being of the Reservation community. In all of these ways, the Northern Cheyenne Tribe and Reservation represent an especially vulnerable social, political, and cultural entity with respect to possible impacts from sudden expansions of large-scale energy development in the region.

A. Tribal Populations.

The Indian Health Service, Billings Area Office, has calculated population projections area-wide, and for its eight Service Units (Reservations) in Montana and Wyoming, 1990-2015. The accompanying Figure 3-15 summarizes these projections for the Billings Area and Northern Cheyenne IHS service populations, in three year intervals.

Figure 3-18 **Projected IHS Service Populations 1990-2014, N.Cheyenne and Billings Area**



Projections prepared by IHS, based on modified 1990 census data and vital event data for 1989-1998. Obtained from IHS, Billings Area Office, March 2002.

These population projection figures show steady if not dramatic increases in the respective populations over the period. Besides providing a helpful visual overview of the projected population growth and the relative size of the Northern Cheyenne Tribe within the IHS area, Figure 3-18 provides an opportunity to note again difficulties and vulnerabilities that the Tribe itself experiences as it confronts impending energy development in neighboring areas.

The IHS uses the projections in the above chart, with other data it generates, in its own planning and budgeting process – including monies budgeted for tribal contracted health programs (see Chapter 5 Part VI). There is a substantial lag time of four to six years or more between the time that something might happen to affect the IHS figures for a given variable and the time that those figures enter the planning data base in usable forms. Local developments that could affect a given Reservation within a short time-span, for instance, are population growth through in-migration, an epidemic of drug use, or other impacts from "boomtown" effects associated with regional energy development could take many years to influence HIS projections and health budgeting.

Many of the figures used below obtained from IHS and presented below refer back to the decade of the 1990s, and sometimes even earlier. The most recent *Billings Area Profile* published by the IHS, Billings Area Office is for Fiscal Year 1996 and uses data primarily from 1994 and 1995. The current very useful *Trends in Indian Health* (useful because it presents tables with data comparing U.S. Indians with U.S. Whites and U.S. All Races, often with considerable time-depth) is for 1998-1999, but many of the tables of figures used extend only to 1995 or 1996.

Thus, it is difficult for the Tribe cannot prioritize its own issues because it depends on IHS funding and planning, which in its turn is based on data that is no longer current by the time it becomes available. Although the data is generated in the local service units, it must be aggregated and processed through the centralized data system before it finds its way back to the Service Unit, if it does. Strangely enough, therefore, the more local the administrative unit, the less data relevant to that unit's operations seems to be available and the more outdated it is. Similarly, all of IHS's priorities reflect data aggregated at the Area or National levels, which may be more or less relevant to the local Service Unit or Tribe as it responds to developments within its region and its own local or immediate circumstances.

For instance, like many other communities, but perhaps more seriously than most, Northern Cheyenne has experienced an epidemic of methamphetamine use in recent years. "Meth" is a very damaging and addicting drug, easy to obtain, and very difficult to treat. Everyone on the Reservation knows that this has become a huge and very serious problem. But there is little money available to deal with the Methamphetamine problem because, even though it has been present now for some years, the data documenting the problem has not yet worked its way through "the IHS system." Currently money is available for alcohol-related problems, which, however, have now been eclipsed by the threat posed by methamphetamine.

In a different vein, health workers in the trenches at Northern Cheyenne report that now more money is becoming available for diabetes, though it still remains insufficient to the need. But the planning and budgeting emphasis focuses on treatment rather than prevention. Most diabetes is avoidable. While diabetes requires expensive treatment after onset, it would be highly desirable to also put resources into a coherent program of education, nutritional sources, and health and recreational facilities that could keep many people from contracting this debilitating and life-diminishing disease. While many at Northern Cheyenne would like to implement such a program, it seems to be difficult or impossible to do so within the framework of current IHS priorities and plans.

In short, the Tribe's dependence on an external agency, whose "center of gravity" is far from the Reservation and its local problems, contributes to an important and greatly needed health delivery system at the local level – but one that at the same time is fragmented, uncoordinated, and unwieldy. This mirrors what we have found in other areas and programs of Tribal government and Reservation life. It is almost as if the Tribe finds itself suspended in a web of support from diverse and uncoordinated federal programs that is critically essential for its survival, but at the same time prevents it from responding to its own immediate local priorities, values, and needs in indigenous and creative ways.

What we find here is a system that maintains, but does little to create nor cure. It is staffed with many caring and capable people whose work is necessary but remains incomplete because of its context. The system is palliative, while insufficiently addressing root causes of the elevated levels of disease, addiction, early deaths, and

poverty that afflict the Northern Cheyenne community. And it means that the Tribe has, among other things, serious and unique vulnerabilities with respect to impacts from proposed energy developments in the region.

The long-term population trend shown and projected in Figure 3-18 above, in its simplest terms, reflects births minus deaths. If deaths exceed births then the population declines, as the Northern Cheyenne Tribe experienced in the late nineteenth and early decades of the twentieth centuries. If births exceed deaths, the population grows as has occurred more recently. But this simple formula leaves out many things, including, most importantly, locality and migration.

The Northern Cheyenne Tribe currently has a significant proportion, approaching half, of its membership living away from the Reservation (see above Part II). The figures shown here, however, generally are for the Reservation itself or for the Reservation and its immediate area (e.g., the IHS "Service Unit"). People live away from the Reservation primarily because the Reservation lacks housing to shelter them, jobs to support them and other critical resources. However, Northern Cheyenne move readily between the on- and off-Reservation populations. In particular, the local numbers can shift rapidly in response to such external factors as the effects of "welfare reform" on people living away in urban areas or new jobs locally created by regional developments. Often, the trends shown in statistical tables or charts, like Figure 3-18 above, seem smooth or constant while the underlying local reality is much more dynamic.

B. Births and Deaths.

1. Birth Rates.

Recent birth rate data for Northern Cheyenne on and near the Reservation, and for Montana, are shown in Figure 3-19 below. Notable is the relative decline in the Northern Cheyenne birth rate. The difference in birth rates shown here appears to be narrowing relatively rapidly, although it still remains large. In 1989-93 the Montana rate for all races was only 43.6 percent of the Northern Cheyenne birth rate, while in 1994-1998 it had increased to a little over half of the Northern Cheyenne rate at 52.8 percent. These figures roughly parallel national trends, as shown in the IHS publication, *Trends in Indian Health 1998-99.*[24]

[24] US Indian Health Service 1998-1999. Trends in Indian Health, pp. 45-46, Chart 3.1, Table 3.1. Washington, D.C.: U.S. Department of Health and Human Services.

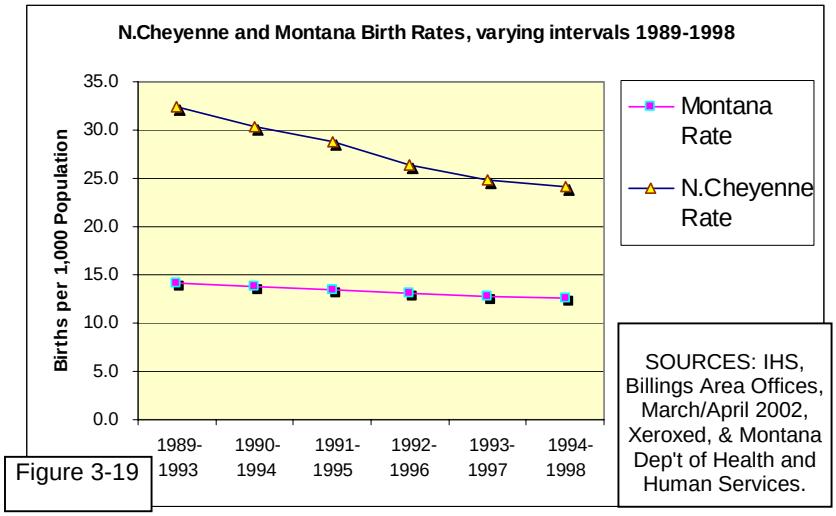
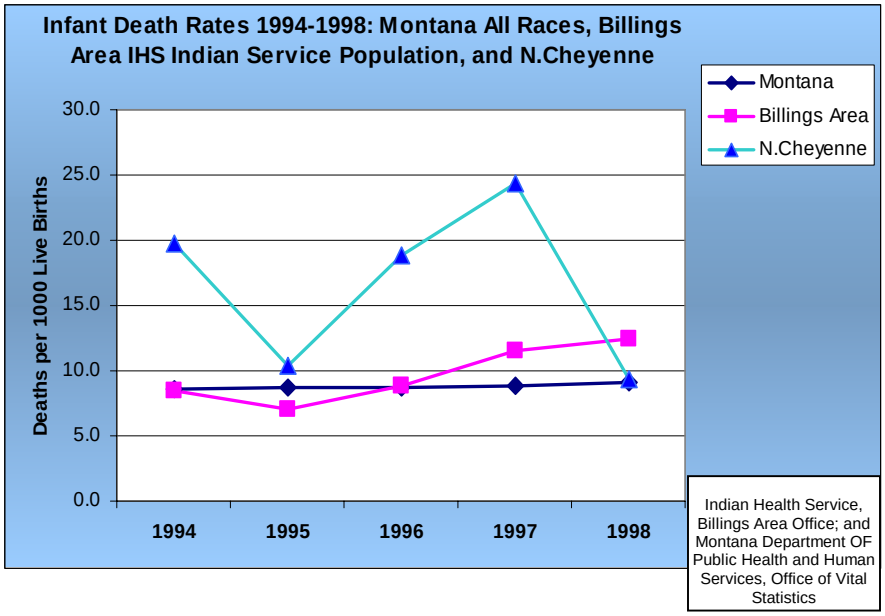


Figure 3-19

i. Infant Mortality.

Infant mortality is another important indicator of a community's health and well-being. Infants are a particularly vulnerable group within any population, and are the newest carriers of the group's potential and future. Infant mortality largely reflects of the stresses and resources of the parents, especially the mother. Lack of adequate nutrition, or family dysfunction, drug, and alcohol abuse especially affect infants and children. Figure 3-20 below shows recent available data on infant mortality.

Figure 3-20



For comparison, Figure 3-21 presents nation-wide data on infant death rates through 1995.[25] This chart also includes the Northern Cheyenne trend line from Figure 3-20 for reference. The reason that the Northern Cheyenne line is so jagged is that it reflects a small number of incidents over a relatively short time. One way to smooth out this effect somewhat is to average the respective rates over the entire five-year interval in Figure 3-20. These results are shown in Figure 3-22.

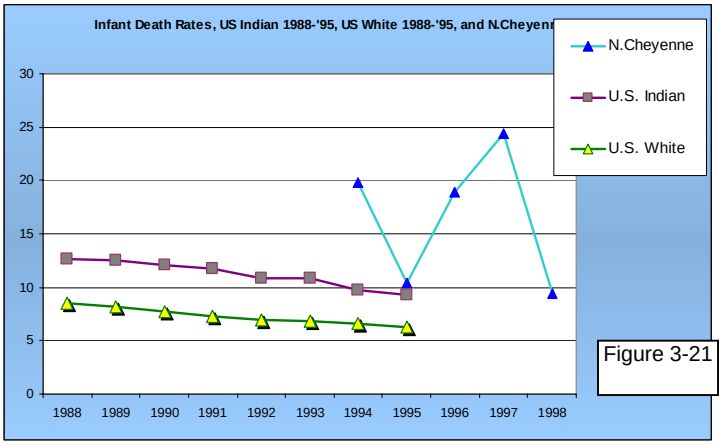


Figure 3-21

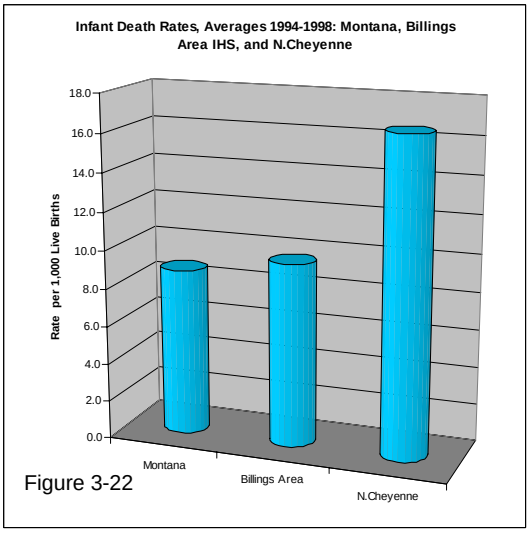


Figure 3-22

ii. Age at Death.

One of the most important indicators of a population's well-being is longevity – how long people in a particular group or area live. This figure reflects many factors indicating the health and well-being of members of the group, including the infant death rate, the incidence of various fatal diseases and accidents, suicide rate, nutrition, the various choices people make and have available that are summed up under the term "lifestyle," and simply the cumulative effects of aging under more or less stressful life experiences. Age at death may be represented in different ways, some of which we will look at below.

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[25] This national data is from IHS's publication, *Trends in Indian Health, 1998-99,* at p. 57. See n.1 above.

However age at death for Native American and white populations in Montana is reckoned, Native American people die on average considerably younger than do whites. According to figures from the Montana Office of Vital Statistics, during the decade from 1991 – 2000 the median age at death for whites was 77, while for Indians death came some fifteen years sooner at only 62.[26] The median age at death is the age at which half of all deaths came earlier and half later. The contrast in this measure locally, in Rosebud County, is even greater at 78 for whites and only 54.5 for "Other" (which means primarily Northern Cheyenne in Rosebud County) (see Rosebud County Health Profile, December 1998, Montana Department of Health and Human Services). Figure 3-23 and Table 3-17 show the median age at death for Montanans during the decade of the 1990's, broken down by race and gender.

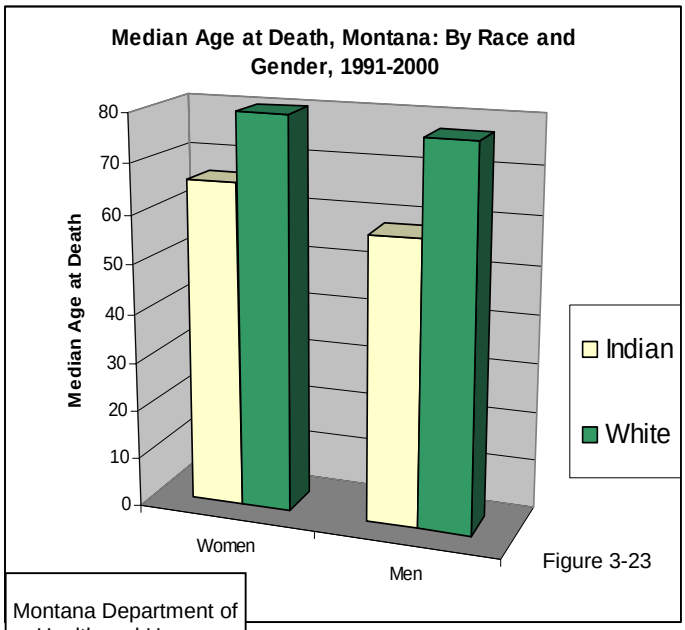


Figure 3-23

Montana Department of Health and Human Services, Office of Vital Statistics

TABLE 3-17

Median Age at Death - Montana 1991-2000

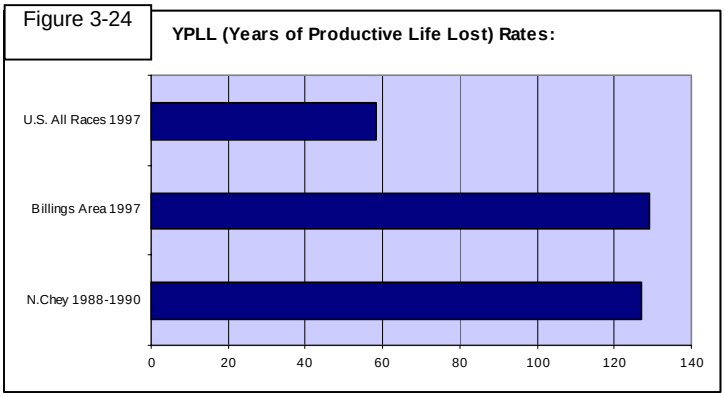
	Women	Men
Indian	66	58
White	80	77

Breaking the figures into quartiles instead of halves gives even more striking differences. During this same decade, one fourth of Montana whites died at or below the age of 67, while one fourth of the Indian population died at or below the age of 41.5 years (State of Montana, Office of Vital Statistics).

[26] Department of Public Health And Human Services, Office of Vital Statistics. *Montana Vital Statistics, 2000,* p. 45, Figure 14.

Another way that health professionals and statisticians measure longevity is by calculating the "Years of Productive Life Lost" (YPLL). Based on IHS figures, [27] the YPLL rate for the United States in 1987 was 58.1. For the Northern Cheyenne and Crow IHS Service Units for Calendar Years 1988-1990 it was 126.9; and for the IHS Billings Service Area (Montana and Wyoming Indian Reservations) that year it was 128.9. The YPLL rate for combined Crow and Northern Cheyenne populations served by IHS is some 120% greater than the U.S. rate for all races.

Figure 3-24



As the above figures show, there are large and important differences between Native Americans and whites with respect to these two measures of mortality, the median age at death for a population, and "Years of Productive Life Lost" as a rate per 1000 persons. These statistical differences reflect the result of earlier policies of overt oppression and the on-going entrenched inequitable economic and social systems that maintain Reservation poverty today.

iii. Suicide.

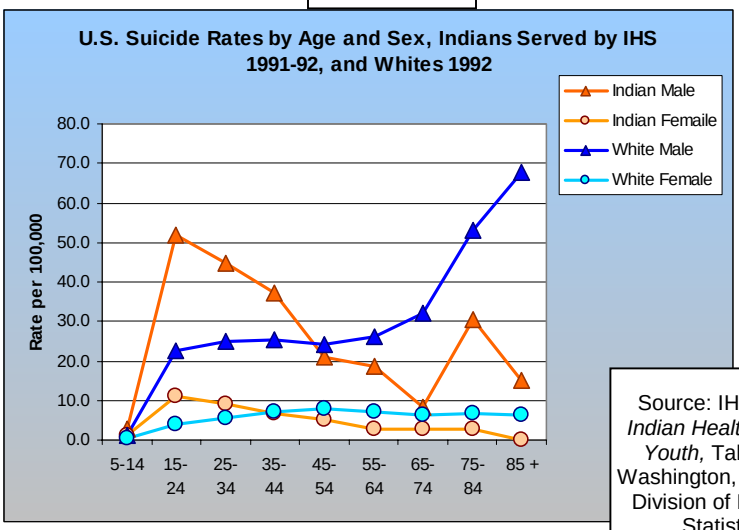
Figure 3-25 shows national suicide rates by age and race for 1993. Rates for men are higher than rates for women. Most interesting is that nationwide young Indian men commit suicide at a rate two and a half times greater than young White men; but this relationship reverses with age. Whereas the White population has considerably

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[27] The YPLL ("Years of Productive Life Lost," "Years of Potential Life Lost") measures the years of life lost if a person dies before a given age. This measure "…highlights premature, preventable, and unnecessary mortality" (*Montana Vital Statistics, 2000,* p. 73). The YPLL rate sums these years for a given population. The IHS measures the YPLL rate from age 65, as shown in Figure 3-24. (As with many labor force statistics, age 65 is rather arbitrarily chosen here as the end of productive life.) Thus, if one dies at age 60, one has lost 5 years of productive life, according to this measure. To get the YPLL rate per 1000 for a population, divide the total or aggregate YPLL for the population by that segment of the population under age 65, and multiply the result by 1000. This explanation and data is from material obtained from the Indian Health Service, Billings Area Office, during March 2002. The data presented here was calculated by IHS using Montana and Wyoming Vital Statistics Data Tapes obtained from the respective Montana and Wyoming State Offices. In contrast, the Montana Office of Vital Statistics calculates the YPLL for Montana residents at large based on age75. This choice may reflect the generally longer life spans of White Montanans. See *Montana Vital Statistics, 2000,* pp. 73ff.

lower rates among the young, the White male suicide rate increases rapidly after about age 50, as the corresponding Indian rate declines.

Figure 3-25



Source: IHS 1996. *Indian Health Focus: Youth,* Table 1-4. Washington, D.C. IHS, Division of Program Statistics

We do not at present have usable or comparable data on suicide for the Northern Cheyenne, or Northern Cheyenne and Crow, populations, except data from the IHS clinic in Lame Deer which shows that 73 patients were treated for attempted suicide from April 2000 through March 2001. (Bauer, 2002). The Montana Department of Public Instruction conducts a "Montana Youth Risk Behavior Survey" in Montana high schools every other year, beginning in 1997. The most recent results are from 1999, and 2,917 high school students from 44 schools participated in this latest survey. The survey includes data on suicide that reverses the gender differences shown above. In both 1997 and in 1999 female students were more likely than male students both to contemplate and to attempt suicide. Female students in Montana in 1999 were than twice as likely as male students to actually attempt suicide.[28] It is not clear if this is function of the time difference between the two surveys, or, more likely, a function regional differences or of some other factor.

C. Drugs and Alcohol.

1. Introduction.

Alcohol abuse has long been a serious problem among reservation Indian populations – as it has been among other chronically poor and discriminated

[28] Montana Office of Public Instruction (OPI). 1999. Montana Youth Risk Behavior Survey Report – 1999. Helena, Montana: Montana Office of Public Instruction. The available data is not broken out by Reservation or by race, and the results at this level are considered sensitive. We did not have time, in the short period available to prepare this Report, to obtain access to this data.

populations, including perhaps most famously the early immigrant Irish. Immigrant Irish, like Native Americans today, similarly faced discrimination and cultural conflict as well as poverty. Unlike most Irish communities, however, which much more than Indians resemble the Euroamerican "mainstream" in race, religion, heritage, and values, Indians have not "assimilated" and indeed often have not wished to do so. Thus, the issues of segregation, poverty, and cultural conflict persisted, and have become chronic – along with their attendant problems of pain and addiction. Currently, serious drug abuse on reservations is emerging as a problem of epidemic proportions, eclipsing even alcohol abuse as a major health issue.

Everyone on the Northern Cheyenne Reservation knows that drugs, especially methamphetamine ("meth," "crank"), have recently become a deadly threat to the community. Methamphetamine is an especially dangerous drug, because it is easy to manufacture locally, easy to obtain, requires difficult and lengthy detoxification and treatment, and has lasting if not permanent effects. The manufacture of methamphetamine also results in environmental problems due to improper disposal of its toxic by-products. Meth is a rising problem throughout Montana and the nation, but indications are that it may be an even larger problem on the Northern Cheyenne Reservation and on other Indian Reservations in the State.

Health professionals and researchers have established what the historical example noted above suggests – namely, that addiction is not linked to race but to poverty. A recent publication that focuses on addiction and prevention issues among Montana's reservation Indian populations puts it this way:

> Alcohol and drug addiction are not about race, they are about pain … Research has shown that when adjustments are made for income and education, there is no significant difference among the races relative to alcohol and drug addiction. A very recent study conducted in Montana … finds that alcohol and drug addiction is far greater among Native Americans *living in poverty* than among those who have incomes above the federal poverty guidelines.[29]

These are important conclusions, in light of on-going racism and stereotyping that unfortunately still persists in Reservation border towns and communities in southeastern Montana. On the other hand, it is important as well to distinguish drug and alcohol problems afflicting reservations from those experienced in other urban or rural poor communities. The article just cited points to one critical difference, by noting that “people are living in tremendous poverty in small communities on reservations, with few opportunities and little hope for change in the future. Problems with addiction in that context become highly visible.”

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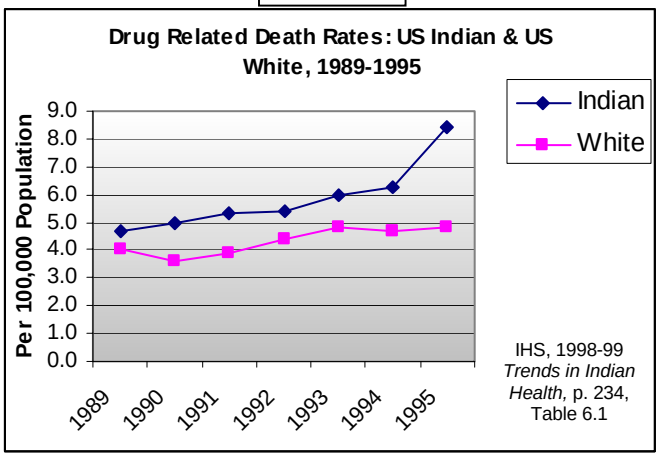
[29] Sharette, Maxine. 2001. "Links to Poverty." *The Prevention Connection Newsletter*, Vol. V, Issue 3 (Fall 2001): 1. Helena, Montana: The Montana Prevention Resource Center and the Montana Department of Health and Human Services.

Indeed, in relatively small, culturally distinct, and socially rather isolated communities such as the Northern Cheyenne Reservation community, what happens to one person not only affects many more people than usually would be the case in the typical nucleated Euroamerican neighborhood, but also a much larger proportion of the community as a whole. Thus, the death of a young person, an Elder, a parent, occasions a sense of loss and grief throughout the Reservation. Community impacts when an individual or a family falls prey to addiction are similarly amplified.

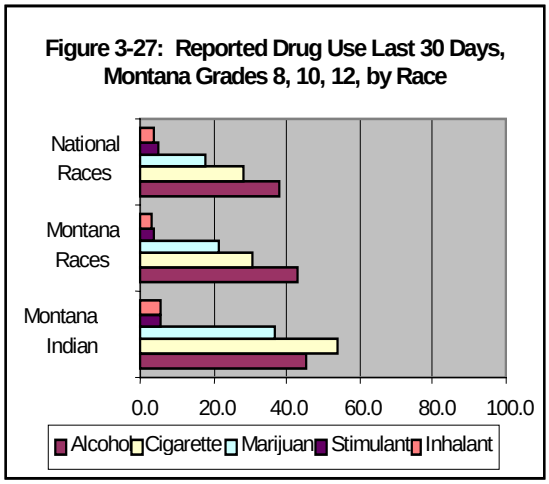
2. Some Indicators of the Drug Use Problem.

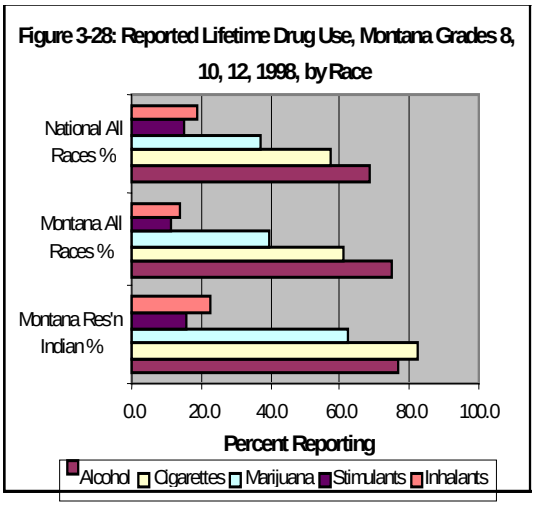
Figure 3-26 indicates an upward trend in drug-related deaths in the U.S. among both Indians and Whites from 1989-1995, with the Indian rate always remaining higher. It also, shows, however, a startling upswing in the rate of deaths directly attributable to drugs among Indians nationally, as compared to whites in 1995. Data is not available beyond 1995.

Figure 3-26



Drug-related deaths, of course, are only one indicator of drug abuse. Data more specific to Montana, and to the Northern Cheyenne Reservation, can be found from several recent school surveys. The Montana Youth Risk Assessment Survey for 1997 and 1999 (Montana OPI), referenced above at note 6. In addition, the Montana Department of Public Health and Human Services conducts its *Montana Prevention Needs Assessment Survey,* also every two years alternating with the OPI survey. Figures 3-27 and 3-28 below show data from this survey, made available by the Boys and Girls Club of the Northern Cheyenne Nation, which has been an active and constructive force on the Reservation to improve conditions for the Tribe's young people.





What these data show is that drug use in Montana's high schools is more prevalent than in the nation's schools generally, and more prevalent yet among Montana's Reservation Indian population. These figures confirm again the general problems noted above. In addition to these recent surveys, the Montana Department of Health and Human Services, with funds from the Center for Substance Abuse and Treatment, conducted a household survey specifically targeted to Montana Indian Reservations in 2001. The Bureau of Business and Economic Research, University of Montana, tabulated and analyzed the data. Although not included in this report, this information is available on a state-wide basis, and Reservation-specific data has been given to the respective Tribal authorities.

More specific data complied by the IHS Clinic in Lame Deer indicates that between April 2000 through 2001, 60 patients were treated for drug abuse-related conditions, 17 were treated for drug overdose, and 19 children were treated for fetal alcohol syndrome. During the same period 390 patients were treated for depression, suggesting that many Tribal members are self-medicating to cope with their depression stemming from unemployment, lack of economic opportunities and other stressors related to underlying socio-economic conditions. (Bauer, 2002).

These various recent surveys and studies indicate that responsible agencies and health care professionals, including Tribal governments, are noting and responding to a growing problem of drug use among Montana's Reservation populations. This clearly is a serious problem. It needs further work as regards the Northern Cheyenne Reservation in particular, but clearly it very much needs to be part of the equation in assessing socio-economic impacts to a federally recognized Indian tribe or Reservation.

CHAPTER 4

TRIBAL GOVERNMENT AND FISCAL RESOURCES

I. Introduction.

Because of the unique history of the Northern Cheyenne Tribe and the Reservation, the structure and fiscal resources of Tribal government are unlike those of most other government entities. As discussed in Chapter 2, the Northern Cheyenne Reservation was established by Executive Order on November 24, 1884, following decades of warfare between the Cheyenne and other Plains Indians and the United States Army. Once moved onto the Reservation, the Northern Cheyenne became totally dependant on United States government rations for survival. These rations were administered by agents of the Bureau of Indian Affairs (BIA), an agency within the Department of the Interior which was established by Congress in 1849. Prior to this time, the functions of the BIA were carried out by the War Department.

From the very beginning of the Northern Cheyenne Reservation, the BIA played a dominant role in Reservation life. In the early Reservation period, effectively through the middle of the 20th century, the BIA ruled on the Reservation by administrative fiat, without the consent or often even the input of Tribal leaders. The BIA also played a major and often negative role in the management of Reservation lands and resources. As described in greater detail in Chapter 2, BIA management of the Tribe's livestock led to the virtual destruction of the Cheyenne ranching economy in the 1920s. In the late 1960s and 1970s, BIA acted to essentially give away the Tribe's valuable coal reserves to private mining companies.

Although the United States government still plays a dominant role on the Reservation, there has been a gradual devolution of Federal authority to Tribal government, beginning with the enactment of the Indian Reorganization Act of 1934 (IRA). The IRA authorized Tribes to enact Tribal constitutions and establish formal governmental institutions. In 1936, the Northern Cheyenne implemented the IRA by adopting a Constitution and By-Laws which was approved by the Secretary of the Interior. The Constitution established an elected Tribal Council as the governing body of the Northern Cheyenne Tribe as well as a Tribal Court. These documents have served as the structural basis for Tribal government for the past 65 years.

Despite the enactment of the IRA and the inauguration of the Tribal self-determination policy in the 1970s, the Federal government still plays a important role in Tribal government today. Tribal government remains almost entirely dependent on the Federal government to fund both its operations and programs. Under the Tribal Constitution, the BIA still exercises a formal supervisory role over the Tribal Council, the Tribe's governing body. The BIA and other federal agencies still manage vital public services on the Reservation, including the management of the Tribe's lands and resources

(including minerals, timber, range land, and farm land), Reservation law enforcement, the Reservation's road network, and the Reservation's health clinic and health insurance system.

Despite the heavy hand of the Federal government, there has been a significant movement toward Tribal governmental effectiveness and autonomy. Until the late 1960s, the Tribal Council operated as a virtual rubber stamp for BIA decisions – as illustrated in the coal leasing debacle. This near disaster provided the impetus for significant efforts to develop the Tribe's own capabilities and oversight. The Tribe is still struggling to develop these capabilities, with almost no discretionary resources of its own and with continuing BIA oversight over all important decisions.

II. Tribal Government Structure.

The Northern Cheyenne Tribal government is organized under a Constitution and By-Laws ("Tribal Constitution") adopted by the Tribe and approved by the Secretary of the Interior under the Indian Reorganization Act of 1934. The Tribal Constitution was adopted in 1935 and was amended in 1960 and 1996. It is attached to this report as Appendix C.

Under the 1996 amendments to the Tribal Constitution, the Tribal government now formally has three branches: (1) an Executive Branch, consisting of the Tribal President, Vice President, Secretary and Treasurer, all Tribal boards and commissions, and all other Tribal agencies and departments; (2) a Legislative Branch, consisting of the Tribal Council and all committees of the Tribal Council; and (3) a Judicial Branch, consisting of all courts established by ordinance by the Tribal Council under the Constitution.[1] Tribal Const., Art XI. The organization of each of these three branches is described below.

A. Legislative Branch.

Under the Tribe's original Constitution, the Tribal Council consisted of one part-time Council member for each 200 Tribal members. The 1996 amendments to the Constitution established a streamlined Tribal Council consisting of 11 full-time members. In addition to an at-large seat held by the Vice President, one seat is allocated to each of the five districts on the Reservation: Ashland, Birney, Busby, Muddy and Lame Deer. The remaining five seats are allocated among the five districts in accordance with the percentage of Tribal membership associated with each district, with fractional seats rounded to the nearest whole number. The ten Council seats allocated to the districts are selected though a primary election held at the district level followed by a general election in which the entire Reservation may vote. Council members are elected to staggered four-

[1] The separation between these three branches in the Tribal Constitution is not complete. The Tribal Constitution still designates the Tribal Council as the "governing body" of the Tribe. Tribal Const., Art. III, § 1. Moreover, the Tribal President still presides over the Tribal Council and the Vice-President still holds an at-large seat on the Council. Tribal Const. Art III, § 2.

year terms, with a general election every two years. Tribal Council members serve on a full-time basis and receive a salary commensurate with the responsibilities of office. Tribal Const., Art III, § 5.

The Tribal Council has numerous enumerated powers under the Tribal Constitution, the most important of which are described below:

Representative Powers. The Tribal Council has the power to negotiate with Federal, State and local governments on behalf of the Tribe and, subject to the approval of the Secretary of the Interior, to employ legal counsel for the protection and advancement of the rights of the Tribe and its members. Art. IV, § 1(a) & (b).

Proprietary Powers. The Tribal Council has the power to approve or prevent the sale, disposition, lease or encumbrance of Tribal lands or interests in lands, including minerals, gas and oil. The Council also has the power of eminent domain. The Council has the power to protect and preserve the property, wildlife and natural resources of the Tribe and to regulate the conduct of trade and the use and disposition of property upon the Reservation. However, any ordinance affecting non-members must be approved by the Secretary of the Interior. Art. IV, § 1(c), (j) & (k).

Fiscal Powers. The Tribal Council has the power to administer any funds within the control of the Tribe and, by resolution approved by a majority of the Council, to make expenditures for Tribal purposes. The Tribal Council, subject to approval of the Secretary of the Interior, must prepare annual budget requests pertaining to moneys appropriated by the Federal government for the use of the Tribe. Art. IV, § 1(f).

Police Powers. The Tribal Council has the power to levy taxes on Tribal members and, with the approval of the Secretary of the Interior, on non-members doing business on the Reservation. Subject to the approval of the Secretary of the Interior, the Council also has the power to adopt ordinances governing the conduct of both members and non-members coming within the Reservation's jurisdiction. This includes the regulation of the inheritance of property and domestic relations, and the appointment of guardians for minors and mental incompetents. The Council also has the power to exclude from trust lands any person not legally entitled to reside on the Reservation. The Council may also establish a Reservation court for the maintenance of law and order and the administration of justice. Art. IV, § 1(g), (h), (I) and (q).

Economic Powers. The Tribal Council has the power to engage in any business that will further the economic well-being of the Tribe and to undertake any economic activity that is not inconsistent with law or the Constitution. The Council may also administer charity and act to protect the health and general welfare of the tribe. Art. IV, § 1(e) & (m).

It is important to observe that many of the Council's powers may be exercised only with the approval of the Secretary of the Interior. This limitation on Tribal sovereignty gives the BIA an important role in overseeing Tribal government and makes Tribal government

quite unlike local governments of comparable size. The Federal role in Tribal government is discussed in more detail in Part III below.

B. Executive Branch.

The Executive Branch is composed of four constitutional officers including the Tribal President, Vice-President, Secretary and Treasurer. The President and Vice President are elected to four-year terms by the Tribe's membership. The Secretary and Treasurer are appointed by the Tribal Council. These constitutional officers employ an Executive Office Manager and an Executive Administrator.

In addition to presiding over the Tribal Council, the Tribal President oversees the Executive Branch of Tribal government. The President has the power, with the advice and consent of the Council, to appoint persons to all Tribal boards, commissions, departments and agencies. Tribal By-Laws, Art. I. According to the Tribe's organization chart, Tribal boards, commissions and committees report directly to the President. There are 15 Tribal boards, commissions and committees which are listed in Figure 4-1 below.

Figure 4-1 – Tribal Boards, Committees and Commissions

Culture Committee
Economic Development Committee
Enrollment Committee
Gaming Commission
Land Committee
St. Labre Task Force
Newsletter Committee
Grazing Board
Natural Resource Board
Housing Authority
Utilities Commission
TERO Commission
Board of Health
Ad Hoc Committee (Off-Res. Energy Development)
Credit Committee

In addition to appointing Tribal boards and commissions, the President is responsible for overseeing numerous Tribal programs. An Executive Administrator is delegated direct responsibility for administering these programs. Beyond this, however, the Tribal programs and administrative agencies are not clearly organized. Unlike the Federal government and many State and local governments, there is no executive cabinet. Instead, the Tribe has 29 "program directors" each of whom report directly to the Executive Administrator and operate with little institutionalized coordination. Figure 4-2. This list of program directors does not include the directors of the Tribal Housing Authority, Dull Knife College, the Tribal Utilities Department, or the Busby School which operate independently from the Executive Branch of Tribal government and report to Tribal boards and commissions.

Figure 4-2 – Tribal Program Directors

Ambulance Service
Buffalo Project
Charging Horse Casino
Community Health Representative
Circle Project
Commodities
Community Health
Economic Development
Elderly
Environmental Protection
Fire Department
Forestry
Head Start
Housing Improvement Program
Low Income Energy Assistance Program
Natural Resources
Personnel
Prosecutor
Drug and Alcohol Recovery
Rosebud Lodge
Sand Creek
Social Services
Tribal Employment Rights Office
Title IV-E Foster Care
TRDP
Tribal Education
Tribal Health
Tribal Services/Enrollment
Workforce Investment Act

This lack of centralized structure is largely a function of the way Tribal programs are established and funded. Most Tribal programs did not originate as Tribal programs per se, but were delegated to the Tribe by the BIA and other Federal agencies under the provisions of the Indian Self-Determination and Education Act, Pub. L. 93-638, and other comparable provisions of Federal law. The Tribal programs administered by the Tribe's Executive Branch are largely structured to conform to the numerous contracts and grants the Tribe administers. As an example, the Tribe's Social Services Department administers the general assistance, child protection, child welfare and foster care licensing programs funded by the BIA, but other programs traditionally coming under the rubric of social services, but which are funded by other Federal agencies (including the elderly food, Title IV(e) foster care, low income energy assistance, Temporary Aid to Needy Families (TANF) and commodities programs), are administered as separate programs overseen by semi-autonomous program directors.

In a similar vein, the Northern Cheyenne Housing Authority, which is funded by a HUD block grant, and its housing improvement program, which is funded by the BIA, are administered separately even though both programs relate to housing. The Workforce Investment Act program and the Job Training and Placement Act program are administered separately from the Tribal Employment Rights Office (TERO) and the adult education program despite the fact that all four programs directly relate to job training, placement and employment. Administration of these programs by separate departments of Tribal government stems in large measure from the fact that each program is funded by a different Federal agency. This fractionated system of administration certainly will make it more difficult for the Tribe to effectively respond to any social and economic impacts which may result from off-Reservation energy development.

The lack of clear organization and coordination is also prevalent in the area of natural resources protection and management. Many Tribal programs pertaining to natural resources including the Natural Resources Department, the Environmental Protection Department, forest development, the Buffalo Project, and the Tongue River Dam Project are administered separately. The Tribe's water and sewer service are managed by a separate, autonomous Tribal Utilities Commission. Other programs pertaining to natural resources including range management, forest management, and wildland fire management, are still administered directly by the BIA. There is no formal mechanism of coordination between the BIA and the Tribe's land management and environmental programs, and often little informal coordination, even where responsibilities overlap. This can result in serious gaps where no one is responsible and essential work does not get done, or is done haphazardly.

Monitoring and assessing impacts from neighboring off-Reservation land management decisions is one such area. No Tribal or Federal program is set up or funded to respond to off-Reservation development projects that may affect the Reservation environment. Environmental assessments, environmental impact statements and permit applications are reviewed by program staff on an ad hoc, unfunded basis. The lack of coherent and well-funded natural resource programs leaves the Reservation especially vulnerable to environmental degradation, not only from on-Reservation activities such as solid waste management, grazing and logging, but also to the environmental effects of large-scale off-Reservation development projects. Environmental documents for major off-Reservation projects that were likely to have major social, economic and environmental impacts on the Reservation, such as the first phase of proposed Tongue River Railroad, have been finalized without any comment from either the BIA or the Tribe.

C. Judicial Branch.

A Reservation court system is authorized by Article IV, § 1(i) of the Tribal Constitution. Although the 1996 amendments to the Constitution provide for separation of powers, the Constitution does not provide specific measures to ensure the independence of the judicial branch of Tribal government.

In 1998, the Tribal Council adopted a separation of powers ordinance designed to address this deficiency. The ordinance provides for the election of at least two full-time trial court judges and appointment by the Tribal President, with the advice and consent of the Tribal Council, of at least three part-time appellate judges. The ordinance also establishes a Constitutional Court which consists of the three members of the appellate court and which has the power to review the constitutionality of ordinances adopted by the Tribal Council. The Constitutional Court also serves as the body with the exclusive power to remove a Tribal judge from office. (Northern Cheyenne Tribe, 1998a). The Tribal Court system is described in greater detail in Chapter 5, Part III.C.

III. The Federal Role in Tribal Government.

As discussed earlier, the Federal government has always played a dominant role in the governance of the Northern Cheyenne Reservation. When the Northern Cheyenne Reservation was established in 1884, the Northern Cheyenne had been defeated in war and were almost completely dependent on the United States government. The relationship between the Federal government and Indian tribes during this time was likened by the Federal courts to that of a guardian and his wards. The Northern Cheyenne Reservation, like most Indian reservations, was governed directly by the Bureau of Indian Affairs with little input from the Tribe.

The trust relationship between the Federal government and the Northern Cheyenne Tribe persists even as the Tribe has gradually assumed a greater role in managing Reservation affairs under the Federal government's self-determination policy. Under the Indian Self-Determination and Education Act, Pub. L. 93-638, the BIA was authorized and encouraged to enter contracts with Tribes devolving responsibility for the administration of federal programs to Tribal governments. Other federal agencies, such as the Indian Health Service (IHS) and the Department of Housing and Urban Development (HUD), have since been given similar authority to contract with Indian tribes for the administration of federal programs on Reservations.

Between 1976 and 1997, the Northern Cheyenne Tribe has entered contracts with the BIA assuming responsibility for approximately 21 BIA programs with a total budget in FY 2002 of $3.7 million. See Table 4-1.

Table 4-1– Contracted BIA Programs and Budgets

Year Contracted	Program Contracted	FY 2002 Budget
1997	Aid to Tribal Government	$131,942.00
1997	Wildlife & Parks	$65,483.00
1996	Youth Emergency Shelter	$232,674.00
1996	Johnson O'Malley - Part B&C	$11,726.00
1994	Adult Education	$22,185.00
1993	Forest Development	$431,732.00
1992	Youth, Work, Learn	$28,967.00
1992	Community Fire Protection	$105,220.00
1992	Transportation Planning	$56,000.00
1991	Indian Child Welfare Act	$64,715.00
1990	Noxious Weeds	$50,000.00
1989	Social Services	$856,148.00
1985	Natural Resources	$52,173.00
1980	Water Resources	$146,296.00
1979	Tribal Court	$492,471.00
1979	Tribal Prosecution	$174,389.00

Year Contracted	Program Contracted	FY 2002 Budget
1976	Housing Improvement Project (HIP)	$138,807.00
1976	Scholarships	$420,252.00
1976	Johnson O'Malley	$100,208.00
1976	Adult Vocational Training (Job Placement)	$130,208.00
	Total:	$3,711,596.00

(Donham, 1993 and 1994; Joseph Eve & Co., 1995, 1996, 1997, 1998, 1999, 2000, 2001; NCT, 2001d)

The Tribe also enters into annual funding agreements with the Indian Health Service (IHS) assuming responsibility for a variety of Federal health programs. In addition, the Tribe now receives Federal funds to administer Federal housing programs, Federal welfare programs, and Federal employment programs, among others. In all the Tribe administers approximately 70 Federal grants and programs with a combined value in FY 2002 of about $21.3 million (NCT, 2001b). This does not include a block grant administered by the Northern Cheyenne Housing Authority, or Federal funds administered by Dull Knife Memorial College or the Tribe's school in Busby. See Chapter 5.

While this devolution of Federal authority and resources has increased the capacity of Tribal government to manage Reservation affairs and provide for the welfare of Tribal members, it has kept the Tribe greatly dependent on the Federal government. Direct Federal funding in the form of grants, contracts, and funding agreements and indirect cost recovery make up the lion's share of the Tribe's total revenues and expenditures. For example, in FY 2002, Federal funding for direct and indirect program expenditures is projected to exceed the Tribe's General Fund revenues by a factor of ten. See Table 4-2.

Table 4-2 -- Tribal Revenues FY 1993 through FY 2002

Fiscal Year	General Fund Revenues	Indirect Cost Recovery	Federal Grants and Contracts
1993	$1,109,270.00	$1,233,303.00	$8,817,820.00
1994	$3,689,597.00	$1,142,211.00	$8,229,797.00
1995	$3,944,459.00	$1,685,393.00	$9,940,209.00
1996	$5,603,939.00	$1,652,309.00	$9,869,615.00
1997	$2,411,875.00	$1,965,850.00	$11,675,498.00
1998	$3,707,110.00	$1,593,085.00	$17,735,586.00
1999	$5,650,221.00	$1,986,325.00	$16,578,646.00
2000	$3,602,202.00	$2,272,632.00	$13,430,851.00
2001	$3,404,291.00	$2,614,877.00	$18,333,000.00
2002	$2,031,026.00	$2,420,380.00	$18,260,648.00

(Donham, 1993 and 1994; Joseph Eve & Co., 1995, 1996, 1997, 1998, 1999, 2000, 2001; NCT, 2001d)

It is also important to recognize that the devolution of federal control is by no means complete and the Federal government still plays a far greater direct role in day-to-day lives

of Tribal members than is typical in off-Reservation communities, and even on other Indian reservations. A number of important and basic programs on the Reservation are still administered directly by the Federal government. The BIA is still directly responsible for providing law enforcement services on the Reservation and also manages the Reservation's forests and rangelands. The BIA is responsible for the Reservation's road network and oversees all real estate transactions. See Table 4-3.

Table 4-3 – Uncontracted BIA Programs and Budgets

Program	2001 Budget
Economic Development	$50,838.00
Roads Maintenance	$200,000.00
Agriculture	$210,909.00
Agriculture	$25,070.00
Forestry	$335,847.00
Trust Services, General	$14,343.00
Real Estate Services	$250,780.00
Real Estate Appraisals	$67,406.00
Probates	$67,861.00
Executive Direction	$173,280.00
Administrative Services	$122,161.00
Law Enforcement	$1,400,000.00
Contract Support	$584,012.00
Total	$3,502,507.00

(NCT, 2001d)

Similarly, while the Tribe has contracted to manage a number of IHS health programs since 1996, the IHS continues to directly administer the Reservation's Health Center as well as the Contract Health Care program, which is in charge of determining whether Tribal members qualify to receive federally funded off-Reservation health care. These programs literally exercise the power of life and death over Tribal members.

It is also important to point out that notwithstanding the flow of Federal funds to Tribal government, most of the programs supported by these Federal funds are effectively Federal programs. The Tribe is not free to spend these Federal program funds to meet the Tribe's own priorities and needs. Most Federal funds must be administered for the purposes and under rules and regulations determined by the Federal government. In a very real sense, Tribal agencies are creatures of the Federal programs they have been set up to administer and are not home-grown institutions of Tribal self-government which were developed organically to meet the Tribe's own needs and priorities. The fragmented organizational structure of the Tribe's Executive Branch stems in large measure from the fact that most Tribal administrative agencies and departments were established to

administer Federal programs.[2]

The devolution of Federal programs to the Tribe has not solved the Reservation's most fundamental problem – the lack of a self-sustaining Reservation economy that could serve as the foundation for the development of genuinely independent Tribal government institutions. The lack of substantial private economic activity means that the Reservation has almost no tax base that could provide discretionary income to support Tribal government. Tribal enterprises historically have generated little if any revenues. Tribal government receives no share of the Federal and State mineral royalties that are used by surrounding off-Reservation communities to fund discretionary programs. (Heaton, 1-09-2002) Income from sale or lease of the Tribe's natural resources is small and declining. See Table 4-4 below.

Table 4-4 – Tribal Income from Natural Resources – 1987-2001

Fiscal Year	Tribal Income from Timber Sales	Tribal Income from Grazing Permits	Tribal Income from Farm & Pasture Leases
2001	$28,231.00	$431,982.00	NA
2000	NA	$525,888.00	$24,875.00
1999	NA	$442,717.00	$24,230.00
1998	NA	$400,867.00	$35,098.00
1997	NA	$67,659.00	$29,874.00
1996	$653,883.00	$437,983.00	$35,089.00
1995	$845,945.00	$365,799.00	$44,985.00
1994	$700,812.00	$403,462.00	$48,897.00
1993	$1,152,524.00	NA	$41,212.00
1992	$370,544.00	NA	$41,989.00
1991	$191,935.00	NA	$40,821.00
1990	$222,402.00	NA	$33,508.00
1989	$375,287.00	NA	$38,242.00
1988	$245,258.00	NA	$35,983.00
1987	$39,988.00	NA	NA

(Donham, 1993 and 1994; Joseph Eve & Co., 1995, 1996, 1997, 1998, 1999, 2000, 2001; NCT, 2001d)

Thus, the resources available to Tribal government to expend on a discretionary basis to meet the Tribe's own priorities are extremely limited, especially when compared to the large amounts of Federal dollars awarded to the Tribe to administer Federal programs. These revenues are not only comparatively small, they are also subject to extreme fluctuation making budgeting and planning difficult. Figure 4-3. Ironically, the largest source of funds available to finance the operations of Tribal government in FY 2002

[2] The Tribe could garner additional flexibility to reprioritize many federal funds if it applied for and obtained Self Governance status. The Tribe reportedly qualifies for the Self-Governance program but has yet to submit an application. (White, 1-08- 2002)

will be revenue generated from recovery of the indirect costs of administering federal programs. Table 4-5.

Figure 4-3 – General Fund Revenues, FY 1993 - FY 2002

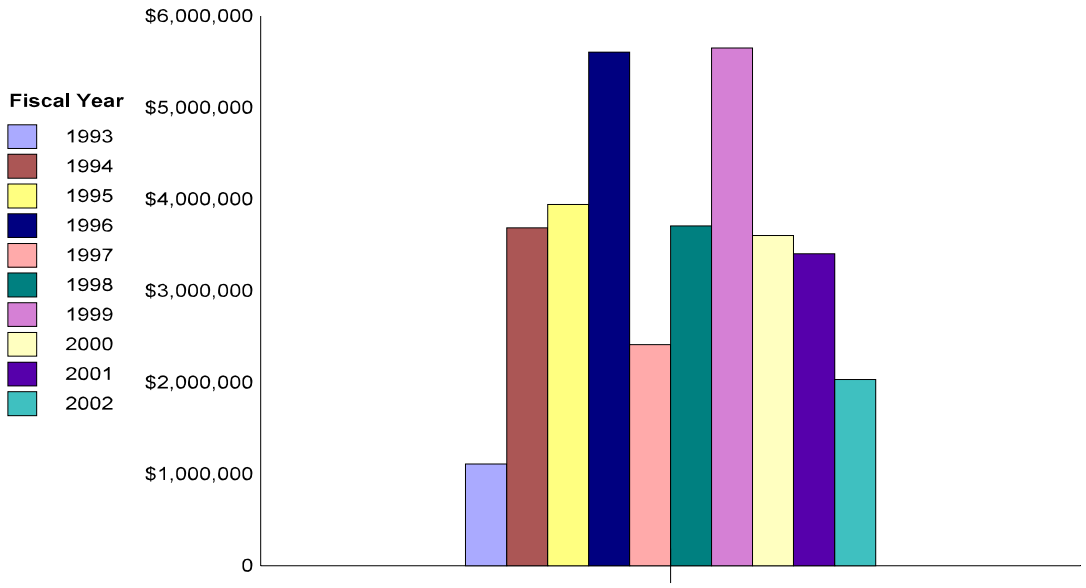


Table 4-5 – General Fund Revenues and Indirect Cost Recovery

Fiscal Year	General Fund Revenues	Indirect Cost Recovery
1993	$1,109,270.00	$1,233,303.00
1994	$3,689,597.00	$1,142,211.00
1995	$3,944,459.00	$1,685,393.00
1996	$5,603,939.00	$1,652,309.00
1997	$2,411,875.00	$1,965,850.00
1998	$3,707,110.00	$1,593,085.00
1999	$5,650,221.00	$1,986,325.00
2000	$3,602,202.00	$2,272,632.00
2001	$3,404,291.00	$2,614,847.00
2002	$2,031,026.00	$2,420,380.00

(Donham, 1993 and 1994; Joseph Eve & Co., 1995, 1996, 1997, 1998, 1999, 2000, 2001; NCT, 2001d)

Taken together, these factors combine to make the Tribe extremely vulnerable to external disruptions, including any social and economic impacts from off-Reservation energy development. Because discretionary funds are so limited, Tribal government has few resources at its disposal that can be devoted to effective participation in the complex

regulatory and political processes which will shape off-Reservation development of coal and coal-bed methane resources. Likewise, Tribal government lacks discretionary funds that can be used to address or mitigate the economic, social and environmental impacts of such off-Reservation development. The Tribe can act to prevent or mitigate the impacts of off-Reservation development only if it has financially stable programs which are supported by new Federal funds that are made available to the Tribe for these purposes.

IV. Tribal Government Fiscal Resources.

A. General Fund.

The General Fund is the major source of discretionary revenues for Tribal government. As discussed in the previous sections, most of the other sources of revenues to the Tribe, such as federal grants or contracts, are committed to specific purposes, and cannot be diverted to meet the Tribe's other priorities no matter how important or pressing. (Heaton, 1-09-2002.)

The General Fund is used to finance the basic operations of Tribal government, including a portion of the salaries of the Tribal President, Vice President and the Tribal Council, government travel expenses, utilities, solid waste management, attorneys' fees, community support services, the Cultural Commission, a portion of the budget of the Tribal Court, and the Grazing Board. In addition, the General Fund is used to provide required matching funds for Federal programs such as the elderly food program and to subsidize the indirect costs of administering certain underfunded Federal programs. Unless special Federal funding is made available, the General Fund will be the primary source of revenue available to the Tribe to address the impacts of off-Reservation energy development. (Heaton, 1-09-2002).

The General Fund revenues are derived from income from Tribal natural resources, primarily timber sales and grazing leases, earnings distributed from the Permanent Fund (see Part IV.C below), interest on other funds (especially State and Federal grant moneys), and federal payments in lieu of taxes. Because the Reservation tax base is so limited, the Tribe imposes no taxes and derives no revenues from taxation. (Heaton, 1-09-2002).

The General Fund budget for FY 2002 is $2.03 million, which represents a decline of $1.37 million or 40 percent from the $3.4 million General Fund budget for FY 2001. The decline is attributable to a sharp decline in earnings distributed from the Permanent Fund – $252,000 in FY 2002, down from $1,100,000 in FY 2001 – as well as continued declines in income from Tribal natural resources (primarily timber and grazing). General Fund revenues are down even more substantially from levels typical in the 1990s. See Table 4-5 above. (Heaton, 1-09-2002).

The reduction in the General Fund budget in FY 2002 has resulted in elimination of Tribal funding for its forestry program, scholarships, food banks, housing improvement, the

Lame Deer High School, and the Boys and Girls Clubs. Funding for the Cultural Commission will be cut 60 percent from FY 2001 levels. There is no money available in the FY 2002 General Fund budget for natural resource monitoring or participation in the processes relating to off-Reservation energy development. (Heaton, 1-09-2002).

In the past, a major portion of the Tribe's General Fund came from income on Tribal trust assets managed by the BIA, including mineral leases, timber sales, grazing permits, and farm pasture leases. However, this source provides much less income today. Income from Tribal natural resources combined in FY 2001 to produce less than $500,000 in revenue for the General Fund. Timber sales produced only $28,231 in FY 2001, down from over $1 million in 1993. No timber sales have been conducted since December 2000 due to closure of the Tribe's sawmill in Ashland. Grazing permits produced another $431,982. See Table 4-4 above. Mineral leases, which provided substantial income during the 1970s and 1980s, produce little or no income today. (Heaton, 1-09-2002; White, 1-08-2002; Feeney, 1986).

B. Indirect Cost Reimbursement.

As explained previously, the Tribe contracts with the BIA, IHS and other Federal agencies to administer various Federal programs on the Reservation. The Tribe also receives Federal grants to pay for special programs and projects. Funding for these Federal programs typically includes both money to cover program expenditures and "indirect costs." Indirect costs represent the estimated cost to Tribal government for administering the federal program and are often set as a percentage of direct program expenditures. Although the use of indirect cost recovery funds is restricted, these revenues do provide a stable source of support for Tribal government as these funds can be used to cover the salaries of Tribal officials responsible for overseeing the programs. Indirect cost recovery represents a significant percentage of the revenues available to support Tribal government, and in FY 2002 will likely exceed the Tribe's own General Fund revenues. See Table 4-5, above.

While indirect cost reimbursement provides some support for Tribal government, the amount allocated by Federal agencies to cover the Tribe's indirect costs is in some cases inadequate to meet the Tribe's actual costs in administering the programs. The Tribe is required to cover these costs directly from its General Fund. The Tribe projects that it will provide a indirect cost subsidy from its General Fund of approximately $450,000 in FY 2002. In addition, certain federal programs, such as the commodities, low-income energy assistance and Title IV(e) foster care programs, require a hard-dollar Tribal match. In FY 2002, the Tribe has budgeted approximately $150,000 from its General Fund in order to remain eligible for these Federal programs. (Heaton, 1-09-2002; Northern Cheyenne Tribe, 2001)

C. Fiduciary Funds.

The Tribe manages two special endowment funds which were established in the 1990s to produce income to fund Tribal projects and programs: (1) the Northern Cheyenne Permanent Fund, and (2) the Northern Cheyenne Economic Development Fund.

Permanent Fund. The Permanent Fund was established by the Tribal Council and approved by the Tribe's membership in 1996. Its endowment derives primarily from funds awarded to the Tribe by the Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992, Pub. L. 102-374 ("Water Settlement Act").

Under the Water Settlement Act, Congress appropriated $10 million for the use of the Tribe as a Tribal development fund. Congress also appropriated $11.5 million to be loaned by the Tribe to the State of Montana to pay costs incurred in repairing and enlarging the Tongue River Dam to provide additional water storage for Tribal use. The loan is to be repaid without interest by the State in 39 annual installments of approximately $295,000. Finally, Congress appropriated $31.5 million for use by the State and the Secretary of the Interior for planning, designing, and implementing the repair and enlargement of the Tongue River Dam. Interest and other earnings accruing on this money before it is spent (and all other money appropriated by Congress for the Tongue River Dam project) is credited to the Tribe. (NCT, 1996).

The endowment of the Permanent Fund therefore comes from three major sources: (1) the $10 million Tribal development fund established by Congress; (2) the 39 annual loan payments of $289,000 to be received from the State; and (3) interest and earnings on moneys deposited in various Federal and State accounts for the Tongue River Dam project. (NCT, 1996).

Under the Permanent Fund Plan adopted by the Tribal Council and ratified by the Tribe's membership, annual earnings of the Permanent Fund may be spent by the Council on Tribal projects and programs. In addition, ten percent of available annual earnings are automatically distributed among the five Reservation districts for uses determined by the districts. None of the earnings may be used for per capita payments. (NCT, 1996).

Under the Permanent Fund Plan, 80 percent of the Fund's annual earnings had to be kept in the Fund until the value of the Fund appreciates to $20 million. During that build-up period, only the remaining 20 percent of the Fund's annual earnings are available for Tribal and district expenditures. After the build-up period, 75 percent of the Fund's annual earnings are available for Tribal and district expenditures. The Permanent Fund plan may be revised only by a two-thirds vote of the Tribal Council and approval of the Tribe's membership. (NCT, 1996).

As a result of the good investment climate during the late 1990s and the fact that the Tongue River Dam project was completed substantially under budget, the Permanent

Fund appreciated relatively quickly. The build-up period ended in September 1999. As of the beginning of 2001, the balance of the fund was approximately $22 million. However, as of January 9, 2002, the Permanent Fund balance had dropped to approximately $19 million, a drop of $3.1 million since the beginning of 2001. These losses resulted from declines in the value of Tribal investments in 2001 which were exacerbated by the economic effects of the September 11, 2001, terrorist attacks. The value of the fund declined by $2 million between September 11 and September 30, 2001. Under the rules of the Permanent Fund Plan, a drop in the Fund balance below the $20 million threshold results in a sharp drop in the revenues available to the Tribal Council to fund Tribal projects and programs. (Gibbs, 2002).

Economic Development Fund. The Northern Cheyenne Economic Development Fund was established in 1998 with an initial endowment of $2.74 million. The Economic Development Fund replaced the Northern Cheyenne Business Development Endowment Fund (Tribal Endowment Fund) which was chartered by the Tribal Council in 1984.

Under a 1984 agreement, the St. Labre Mission agreed to transfer certain portions of income and capital gain accruing within its own endowment to the Tribal Endowment Fund. St. Labre continued to manage these funds, however. Also in 1984, the ARCO Exploration Company donated $250,000 to the Tribal Endowment Fund. In 1998, St. Labre and the Tribe reached a settlement as to the value of the Tribal Endowment Fund and St. Labre agreed to transfer these moneys to the Tribe. The Tribe then transferred these moneys to the Northern Cheyenne Economic Development Fund. (NCT, 1998a).

The purpose of the Economic Development Fund is to provide financial or other assistance to facilitate the successful development of commercial enterprises owned by the Tribe or its members. Any financial resource within the Economic Development Fund may be used to provide assistance to a Tribal enterprise, but only the net income of the Fund may be used to provide assistance to enterprise owned by a Tribal member. (NCT, 1998a).

The current balance of the Economic Development Fund is approximately $2.8 million. However, a substantial portion of this fund has been committed to guarantee a loan by First Interstate Bank to the Tribe's Ashland sawmill, an unprofitable Tribal enterprise acquired from the St. Labre Mission in 1999. The mill has since shut down. (Heaton, 1-09-2002).

D. Special Revenue Funds.

The bulk of the financial resources at the disposal of Tribal government, approximately $21.3 million in FY 2002, are special purpose funds awarded by the Federal government under contracts or grants to carry out specific Federal programs. This figure includes approximately $3.93 million granted by the Department of the Interior, largely for BIA-delegated programs, $2.69 million awarded by Department of Health and Human

Service for Tribal social welfare programs; $5.8 million granted by the Indian Health Service for Tribal health programs; a $4.75 million grant awarded by the Department of Justice on a one-time basis to enhance the Tribe's justice system; $770,000 granted by the Environmental Protection Agency for Tribal environmental programs; and $410,000 awarded by the Department of Labor for Tribal employment programs. It does not include the approximately $3 million annual block grant awarded to the Tribal Housing Authority, $3 million in federal funds awarded to Dull Knife College, or the $2 million in Federal funds received annually by the Tribe's school in Busby. See Table 4-6.

Table 4-6 – Special Revenue Funds by Category

Agency	Funding
Department of the Interior	$3,933,905.00
Department of Health & Human Services	$3,031,092.00
Indian Health Service	$5,802,759.00
Administration on Aging	$33,721.00
State of Montana	$35,993.00
Environmental Protection Agency	$777,712.00
Equal Employment Opportunity Commission	$29,193.00
Department of Labor	$414,156.00
Department of Housing & Urban Development	$113,681.00
Department of Commerce	$70,972.00
Department of Justice	$4,747,340.00
US Department of Agriculture	$235,638.00
Other Funding	$381,540.00
Bureau of Reclamation	$1,718,011.00
Total	**$21,325,713.00**

(NCT, 2001b)

V. Tribal Government Expenditures.

Tribal expenditures on programs funded by special revenue funds are discussed in Chapter 5 which addresses Reservation public services and facilities in some detail. It is shown there that although the amounts awarded are seemingly large, they are still inadequate to meet the need for public services and facilities on the Reservation.

The remainder of Chapter 4 address expenditures of the Tribe's discretionary funds – the General Fund and revenues received from indirect cost recovery (ICR). It is these funds that are available to the Tribal Council to fund the operations of Tribal government and discretionary Tribal programs and services. As is shown below, the Tribe currently has little, if any, funds that can be devoted to preventing, monitoring and mitigating the impacts of off-Reservation energy development. Virtually all of the Tribe's General Fund and ICR revenues are devoted to maintaining the basic operations of Tribal government and subsidizing the operations of various Federal programs. Over 91 percent of the FY 2002

General Fund and ICR budget is devoted to salaries of Tribal officials, the operating expenses of Tribal government, and the payment of matching funds and indirect cost subsidies for Federal programs. Less than 9 percent of the FY 2002 budget ($390,000) is budgeted for community services and discretionary Tribal programs. The largest element of this discretionary spending ($130,000) is devoted to payment of funeral expenses of Tribal members. The Tribe has no independent financial resources available to even begin to address the daunting social and economic problems currently besetting the Reservation, much less to address any added social, economic and environmental impacts that may result from off-Reservation energy development.

In FY 2001 and FY 2002, the Tribe budgeted the following categories expenditures from its General Fund and indirect cost revenues. See Table 4-7. These categories of expenditures are discussed in further detail below.

Table 4-7 – Combined General Fund & Indirect Cost Budgets -- FY 2001 & 2002

Expenditure Category	FY 2001	FY 2002
Salaries, Taxes & Benefits	$2,149,450.32	$2,268,944.42
Operating Expenses	$1,717,800.00	$1,193,747.85
Community Support Services	$388,575.88	$171,400.00
General Fund Departments	$470,339.00	$220,070.00
Matching Funds	$189,565.69	$147,243.86
Non-Recurring Funding	$800,841.00	$0.00
Indirect Cost Subsidies and Accounts Payable	$461,000.00	$450,000.00
Total	$6,177,571.89	$4,451,406.13

(NCT, 2001d)

Salaries, Taxes and Benefits. Approximately $2.27 million from the total General Fund and ICR budget is budgeted for salaries, payroll taxes and benefits. Of this, $799,405 is budgeted to pay the salaries of 18 “political” positions. Another $1,070,049 is allocated to pay the salaries of the 29 “program directors.” The remainder is allocated to payroll taxes and fringe benefits for these employees.

The 18 Political Positions are listed in Figure 4-4 below and the 29 Program Directors were listed in Figure 4-2 above. Salaries for these elected and appointed Tribal officials are relatively modest ranging from approximately $27,000 for the lowest paid position to about $55,000 for the Tribal President. Tribal Council members each earn a salary of $41,000 and the average salary for a program director is just under $37,000.

Figure 4-4 – Tribal Political Positions

President	Executive Administrator
Vice President	Tribal Council Members (10)
Secretary	Clerk of Court
Treasurer	Chief Judge
Executive Office Manager	Tribal Judge

In all, the Tribe has a total of 265 full-time employees (including the 18 political positions), 34 part-time employees, and 135 temporary employees. Approximately 94 percent of these employees are Native American and 85 percent are Northern Cheyenne Tribal members. Most of these employees are paid from special revenue funds, not from the Tribe's General Fund.

Operating Expenses. Approximately $1.19 million from the Tribe's General Fund and ICR budget is allocated to the operating expenses of Tribal government. This is a reduction of about $520,000 from the $1.72 million budgeted for this purpose in FY 2001. These expenses include travel, utilities, Reservation solid waste management, supplies, insurance, equipment, maintenance, and interest payments on bonds issued for construction of the capitol building. Approximately $290,000 is budgeted for legal services, and $140,000 for accounting services. The budgets for equipment, building maintenance, and supplies were all cut drastically in FY 2002 compared to FY 2001. The Tribe's computer consultant and self-governance specialist were terminated in FY 2002.

Community Support Services. Approximately $170,000 is budgeted for community support services in FY 2002 compared with $380,000 million in FY 2001. These community services are uniquely Tribal services that promote the Tribe's solidarity and culture. Of this, $130,000 is budgeted for the funeral expenses of Tribal members. The rest will go to assist handicapped elders ($5,000), support the Sacred Keeper ($14,400), and pay the expenses of various Tribal boards and commissions ($10,000). The budget for the support of the annual Pow-Wow was eliminated and the budget for other public ceremonies and events was cut from $10,000 to $2,000. The budget for the Sand Creek Massacre memorial program was cut from $60,000 to $10,000.

General Fund Departments. Approximately $220,000 has been allocated from the FY 2002 General Fund budget for discretionary Tribal programs. These expenditures are significant in that they represent the Tribal Council's own spending priorities and are not required by any particular Federal program or grant. In FY 2002, the Council budgeted $20,000 for the Cultural Commission (down from $50,000 in FY 2001); $24,000 for the Tribal Court, $48,600 for the Grazing Board; $57,470 to be distributed to the five districts (down from $112,000 in FY 2001); $10,000 for the Tribal Buffalo program; and $80,000 to support children, elderly, health and education programs (down from $134,000 in 2001). Support for the Tribal forest development program was eliminated.

Nonrecurring Funding. In FY 2001, the Council approved non-recurring expenditures of $800,000. These expenditures were used to subsidize the Tribal Utilities Commission, provide scholarships to Tribal members, and support the Lame Deer High School, the Boys and Girls Club, the food bank, and the Tribal prosecutor. All of these expenditures were eliminated in FY 2002.

Matching Funds. Approximately $150,000 has been allocated to pay the non-discretionary matching costs of various Federal programs. These payments are mandatory if the Tribe is to receive the benefits of the Federal programs. This includes $65,000 for the Commodities program, $38,000 for the elder food program, $23,000 for low-income energy assistance, $11,000 for child welfare, and $10,000 for congregate housing for elders.

Subsidized Indirect Costs. In FY 2002, the Tribe allocated $450,000 to subsidize the unrecoverable indirect costs of administering Federal programs and grants. These costs are non-discretionary in the sense that, without the Tribal subsidy, the Federal programs could not be continued.

CHAPTER 5

RESERVATION PROGRAMS, SERVICES AND FACILITIES

Chapter 5 of this report examines Reservation programs, services and facilities in 10 areas: (1) housing, (2) utilities, (3) law and order, (4) fire protection, (5) health, (6) education, (7) social services, (8) employment and job training, (9) recreation, and (10) transportation. A final section evaluates the adequacy of the programs, services and facilities in meeting the Reservation's needs and their vulnerability to disruption by off-Reservation development.

I. Housing.

A. Housing Availability.

Housing Stock. There is a severe housing shortage on the Reservation. We estimate that there are approximately 1,200 housing units on the Reservation to serve an estimated Reservation population of about 5,000. See Chapter 3. The number of housing units on the Reservation is seriously inadequate to meet the existing demand for housing on the Reservation. As a consequence, many employed Indian families cannot live on the Reservation near their friends and family due to the shortage of available housing. Some Tribal members must commute up to 45 miles per day to their jobs on the Reservation. Many other families live with relatives in Reservation housing. Due to the housing shortage, most Reservation housing is overcrowded. In some instances, three or four families live in a single home. Housing overcrowding leads to family conflict and social tension and causes the existing housing stock to deteriorate faster than normal. (NCHA, 2001:9).

Housing on the Reservation falls into four basic categories that are discussed below: (1) public housing managed by the Northern Cheyenne Housing Authority ("NCHA"); (2) employee housing; (3) private housing; and (4) mobile homes.

Public Housing. Of the total estimated Reservation housing stock of 1200 units, approximately 800 homes are public housing managed by the NCHA. (Tall Bull, 1995). These 800 units fall into three categories: "mutual self-help" (MSH) housing; low-income rental housing; and housing built under the Native American Housing Assistance and Self Determination Act of 1996 ("NAHASDA").

Mutual self-help is a program authorized under the 1937 Housing Act in which a homeowner acquires equity in the home by making rent payments to the Housing Authority under a "rent to own" agreement. Prospective homeowners sign land leases with the Tribe for 25 years with an option for an additional 25 years. Although a payment schedule specifies the minimum monthly rent which would amortize the cost of the home over a 25 year period, it is possible for residents to accelerate the payment of principal thereby allowing full ownership of the home in less than 25 years. Initially, the program required

that the prospective homeowner contribute labor toward the construction of the home. In later years, the homes were constructed primarily or entirely by contractors. The Housing Authority currently manages 515 MSH units. Approximately, 70 MSH houses have been conveyed to tenants. (Feeney, 1986:6-2, 6-3; NCHA, 2001:28).

The second type of public housing managed by the Housing Authority is low-income rental housing. This type of housing is owned by the Housing Authority which provides subsidized rentals to low-income Indian tenants. Rental payments are set according to income. (Feeney, 1986:6-3). The NCHA currently manages 285 units of low income rental housing on the Reservation. (NCHA, 2001:28).

Under NAHASDA, a Tribal Housing Authority can apply for a block grant which can be used for a range of affordable housing activities for low-income families as set out in an approved Indian housing plan, including: (1) modernization and operation of the existing MSH and low-income housing stock; (2) the acquisition, construction, reconstruction or rehabilitation of affordable housing; (3) the provision of housing-related services; (4) the provision of management services for Tribal housing projects; and (5) crime prevention and safety activities. 25 U.S.C. § 4101 et seq. Since the advent of the NAHASDA program, the Tribe has built or acquired 55 housing units, including 27 surplus homes acquired from the United States Air Force (installed as low-income rentals), and 28 modular homes (managed as lease-purchase housing similar to the former MSH program). Ten additional modular homes are planned for installation in 2002. (Tall Bull, 1995; Simpson, 1-23-2002).

Much of the stock of public housing on the Reservation was built between 1967 and 1985. Between 1967 and 1985, the NCHA constructed 641 units of MSH and low income rental housing. (Feeney, 1986). In the years since 1985, the NCHA has been able to construct or acquire only 201 additional units despite substantial growth in the Reservation population. (Tall Bull, 1995; Simpson, 1-23-2002).

Employee Housing. Due to the lack of available housing on the Reservation, a number of public agencies on the Reservation have constructed housing for their employees and provide this housing to their staff as a fringe benefit. Existing employee housing units include: 20 units of employee housing owned by the Lame Deer School District, 15 units managed by the Busby School, 34 units managed by the Indian Health Service, 25 units managed by the BIA, and 11 owned by Chief Dull Knife College. (Feeney, 1986:6-4; Littlewolf-Millegan, 1-10-2002; White, 1-08-2002; Simpson, 1-23-2002).

Private Housing. In addition to the approximately 800 units of public housing, there are about 300 units of privately owned housing on the Reservation. About half of these units are called “Judgment Fund” homes which were constructed by BIA for individual Tribal members in the early 1960s using funds awarded to the Tribe by the Indian Claims Commission. The remainder of the private housing stock includes housing conveyed by the Housing Authority to tenants under the MSH program, and approximately 46 homes on the Reservation that were built using private financing or without financing. This includes the houses associated with ranches in the outlying districts and traditional log

cabins built by Tribal members. (BIA Housing Improvement Program, 1989)

Opportunities for new construction of private housing are limited even for Tribal members who hold the kind of steady, good-paying jobs that would make them qualified to be homeowners in an off-Reservation community. Because trust land cannot be pledged as collateral for a mortgage, it is very difficult for Tribal members to secure credit to finance the construction of new homes or the substantial renovation of existing homes. Another problem is that homes on the Reservation rarely appreciate in value due to the lack of available financing for prospective purchasers. Hence, the equity invested by Reservation homeowners in their homes does not appreciate. Mortgage and financing assistance programs are needed to assist Tribal members who have the resources. First Interstate Bank of Montana recently opened a branch in Lame Deer and the Housing Authority plans to work closely with the bank to secure private financing for qualified individuals. (NCHA, 2001:9, 14; Rodriguez, 1-23-2002).

Mobile Homes. The number of trailers and mobile homes on the Reservation is unknown. There are two established trailer courts on the Reservation. The largest, the Burns trailer court is located on trust land in Lame Deer and has currently about ten units parked on site. There is reported to be space for a total of 30 trailers at the Burns site. The Stenis trailer court currently has about three trailers parked on-site although there is apparently space available for more. Short-term occupancy rates were substantially higher during peak construction periods at Colstrip in the early 1980s. (Feeney, 1986:6-4; Foote, 1-23-2002).

B. Housing Condition.

Overall, the existing housing stock on the Reservation is in very poor condition. Most of the public housing on the Reservation was built during the 1970s and early 1980s and was poorly constructed. Shoddy construction is worsened by the wear and tear of the overcrowding caused by the overall Reservation housing shortage. Approximately two thirds of the 515 units of mutual self-help housing (347 units) have been found to need substantial rehabilitation. Similarly, the Housing Authority has determined that 156 (or 55 percent) of the 285 low-income rental units it manages are in need of rehabilitation. Another 20 units owned by the Housing Authority have been abandoned and are in need of full rehabilitation and reassignment. Many units need complete renovation due to settling or cracking foundations resulting from deficiencies in original construction. In addition, many septic tanks and drainfields are not functioning properly or have outlived their useful life. Asbestos has been found in a number of mutual aid homes that were built during the 1980s and requires remediation. (NCHA, 2001:28; Simpson, 1-23-2002; Rodriguez, 1-23-2002).

Most private homes on the Reservation are also substandard. Most of the 148 “Judgment Fund” homes built by the BIA on the Reservation have only one room, no foundation and many lack indoor plumbing. (Rising Sun, 1-23-2002). A housing inventory prepared approximately ten years ago by the Tribe’s Housing Improvement Program found that 191 of the 213 units of private housing on the Reservation were in substandard

condition. Of these, 171 homes needed renovation and 20 needed replacement. (BIA Housing Improvement Program, 1989). If these figures are combined with the 347 mutual help homes and 156 low-income rental homes found to need renovation in the Housing Authority's 2001 Indian housing plan, one can conclude that as many as 694 homes out of a total housing Reservation stock of about 1200 units are in inadequate condition and need replacement or renovation. (NCHA, 2001:28).

Data from the Tongue River Electrical Cooperative indicates that there are 1008 residential and rural electrical hookups on the Northern Cheyenne Reservation. Even assuming that some housing units have unauthorized connections to the electrical grid or their own source of electrical power, this data indicates that a significant percentage of housing units on the Northern Cheyenne Reservation (> 10 percent) do not have regular electrical service. (Tongue River Electrical Cooperative, 2002).

C. Housing Programs.

The Tribe operates two programs which are intended to address the housing situation on the Reservation. The Tribe operates a Housing Authority which is funded by the United States Housing and Urban Development ("HUD") under the NAHASDA program. The Housing Authority manages all public housing on the Reservation and is responsible for new public housing construction and renovation projects. A second program, the Housing Improvement Program ("HIP") provides funding for the renovation of private homes on the Reservation. Funding for either of these housing programs is inadequate to meet the need for renovation and replacement of existing substandard housing units, much less to alleviate the tremendous housing shortage which has driven Tribal members into overcrowded housing conditions or off the Reservation entirely.

Housing Authority. The Northern Cheyenne Housing Authority ("NCHA") is an agency of the Northern Cheyenne Tribe and was established in 1962. It operates under the direction of a five person board, whose members are appointed by the Tribal Council for staggered four year terms. The NCHA was created under the provisions of the 1937 Housing Act and now operates as a Tribally designated housing entity under NAHASDA. The NCHA is currently responsible for managing approximate 800 housing units on the Reservation – 515 mutual self-help homes, and 285 low-income rental units. As indicated above, a majority of this housing stock needs substantial maintenance and repair. (Feeney, 1986:6-2; NCHA, 2001:28).

The Housing Authority projected a total of $3,782,684 in resources in its FY 2001 budget. Of this, $3,104,524 came from a block grant from HUD under NAHASDA. The block grant is a fixed number which varies according to appropriations for Indian housing on a national level and is projected to decrease in the future. NAHASDA funds are intended to cover both the NCHA's operating and capital expenses. In practice, under the NAHASDA block grant system, the NCHA has very little funding left over for renovations and new construction. For example, in FY 2001 a total of $485,000 was allocated to such projects in comparison with $821,500 for planning and administration, $134,200 for utilities,

$827,000 for maintenance, $129,000 for insurance, and $189,000 for tenant services. (NCHA, 2001:10-11; Simpson, 1-23-2002).

As is evident, the level of funding available for public housing is inadequate to meet the Reservation's existing need to improve the condition of existing housing and construct new housing units. The NCHA has approximately 581 families on its waiting list for low-income housing. This includes 219 families in Lame Deer, 48 in Birney, 57 in Ashland, 143 in Busby and 114 in Muddy. Many of these families have been on the waiting list for more than five years. Due to the long waiting list, many families do not bother to apply for housing. The NCHA believes that there are approximately 864 families living on or near the Reservation that need homes. (NCHA, 2001: 8-9). The total cost for providing homes for each of these families would be approximately $75 million assuming an average new home cost of $87,447 (as provided for in the BIA's Housing Improvement Program guidelines). (NCT HIP, 2002).

The NCHA likewise has only marginal capacity to bring existing housing up to standards. The NCHA has estimated that 503 of its approximately 800 units are in need of substantial renovation. (NCHA, 2001:28) Assuming an average cost of $35,000 per renovation, it will take $17.5 million just to bring all of its existing housing stock up to standards. This is more than five times the total HUD block grant for 2001 which was intended to cover the costs of existing operations in addition to capital projects such as renovations.

In its FY 2001 Housing Plan, the NCHA expected to renovate 11 low rent units and 40 mutual self-help units. No new construction was planned although the Tribe received 14 low rent homes for no cost from the Air Force. Although "free," these houses cost the Housing Authority approximately $50,000 each in transportation, installation and other costs. At the same time it was acquiring 14 units of new housing, it also planned to demolish 5 units. If the net gain in housing is projected out into the future, it will take almost a hundred years before housing can be provided to every family on the Reservation even under the optimistic assumption that the number of families on the Reservation will remain constant. (NCHA, 2001:18, 20; Simpson, 1-23-2002).

It is worth noting that the amount of new housing constructed on the Reservation has declined from its high point in the 1970s and early 1980s. As a result, the amount of available housing has not even remotely kept up with increases in demand. Unless federal funding for Reservation housing projects is restored to the levels of two decades ago, the Tribe has little hope of resolving its housing crisis.

The promise of homeownership provided for under the MSH program has yet to be fulfilled. There are approximately 305 houses eligible for conveyance under the mutual self-help program. However, there are substantial barriers that prevent the Housing Authority from immediately transferring ownership of mutual self-help homes to qualified tenants. The houses must be evaluated and fully rehabilitated to address all public health and safety problems before being conveyed. Even after such renovations are completed, prospective homeowners now must wait years to obtain a conveyance because the land

on which the houses were built is owned in trust by the BIA for the Tribe or individual allottees. Some conveyances have languished for as long as five to six years pending resolution of these issues. (Rodriguez, 1-23-2002).

Housing Improvement Program. The HIP program is funded by the BIA under a contract between BIA and the Tribe under the Indian Self-Determination and Education Act, Pub.L. 83-638 ("638 contract"). HIP is a one-time assistance program to provide home renovation and repair services to homeowners with incomes 125 percent or less of the federal poverty line whose homes are in substandard condition. HIP money is not available to occupants of mutual self-help housing or low income housing managed by the NCHA. (Rising Sun, 1-23-2002; Martin, 2000; BIA, 1993).

Approximately 18 homes out of the approximately 191 substandard private homes on the Reservation are on the HIP program's priority list for complete renovation or replacement. . However, the HIP program has the budget to complete a maximum of 2 to 3 renovation projects each year. Consequently, households with elderly residents and large families with children are given special preference. There is a limit of $35,000 per renovation. Where a renovation cannot be completed for this amount, the project cannot be funded. (Rising Sun, 1-23-2002).

Funding is allocated by the BIA on the basis of population and income data compiled in its Labor Force Reports for the Tribe. Additional funding may be allocated on the basis of a regional priority list. Last year, the program received the funding for only two projects through the regular HIP process and funding for an additional project through the special regional priority list. With 171 substandard private housing units on the Reservation, it will take decades for each house to be renovated at the current rate of renovations under the HIP program. (Rising Sun, 1-23-2002).

The Tribe's HIP program also receives grants from the U.S. Department of Agriculture's Rural Development program to assist low-income homeowners with weatherization projects. The grant limit is $7,500 per project. Since 1991, annual awards to the Tribe have ranged from $5,000 to $66,255. Approximately 50 Reservation households have received grant assistance under this program between June 1992 and November 2001. The majority of the grants were for the full amount of the grant limit. (NCT HIP, 2002).

II. Utilities.

A. Water and Sewer.

The Tribe established the Tribal Utilities Commission ("NCUC") in 1966 as an independent Tribal organization responsible for the operation of water and sewer services in each district on the Reservation. (Northern Cheyenne Tribal Council, 2000) Since 1960, the Indian Health Service ("IHS") has been authorized by Congress (Pub.L. 86-121) to construct water supply and sanitation facilities on Indian reservations. Once constructed,

the Tribal Utilities Commission assumes ownership of the facilities and has the responsibility to operate and maintain them. (Feeney, 1986:6-11).

The NCUC charges user fees which are supposed to cover its operation and maintenance costs. Current monthly user fees are $17 per household for water service and $13 per household for sewer service. A connection fee of $200 for members and $350 for non-members is charged for new water and sewer hook-ups. In 2001 the Tribe provided the NCUC with a grant of $100,000 from its General Fund to help defray its operating expenses. The Tribal Council resolution approving the subsidy (No. DOI-008(01)) attributed the need for a subsidy to the high cost of operating new reverse osmosis water treatment plants in Birney, Muddy and Ashland. At the same time, however, the Council exempted households headed by elders aged 60 or older from paying water and sewer fees and directed that all delinquent water and sewer accounts be forgiven. (Feeney, 1986:6-12; NCT, 2001; Scalpcane, 1-23-2002).

A description of the water and sewer facility in each of the five districts follows:

Lame Deer. The Lame Deer community water system serves approximately 770 connections and draws water from five alluvial wells with an average depth of approximately 88 feet. The fifth well was drilled in 1997 and became fully operational about two years ago. There are concerns about bacteriological contamination of this well which have been addressed through chlorination. The new well doubled the pumping capacity of the system to approximately 600 gallons per minute (gpm). In addition, a new 326,000 gallon storage tank was installed which brings the total storage capacity to about 700,000 gallons. Two other steel tanks were installed in the late 1960s and early 1970s. Both of these tanks need to be sandblasted and recoated on the interior. One of the tanks has blistering paint on 50 percent of the interior and also needs repainting on the exterior. The screen on the top of this tank and the overflow pipe also need to be replaced. (Scalpcane, 1-23-2002).

Prior to the installation of the new storage capacity, Lame Deer experienced occasional water shortages, especially in higher elevation areas. The new well and storage tank has largely alleviated this problem. The most significant remaining water system deficiency is the lack of adequate water pressure in the system for fire protection. Also, as discussed in the next section, about half of the fire hydrants in Lame Deer are inoperable. No Tribal agency claims any responsibility for maintaining the hydrants. (Matas, 2001:40; Young, 1999; Bolar, 1995; Wiseman, 1-24-2002; Scalpcane, 1-23-2002).

The Lame Deer sewer system serves approximately 400 residential connections and 50 commercial connections. The waste water treatment facility is a three-cell lagoon system which was constructed incrementally between 1957 and 1971. The ponds discharge into Lame Deer Creek, a tributary of Rosebud Creek, under a federal Clean Water Act discharge (NPDES) permit. The system is seriously inadequate and operates in violation of its NPDES permit limits for Biological Oxygen Demand ("BOD") at least once every month. The plant's waste water treatment cells are unlined and may be leaking into Lame Deer Creek. In addition, because the sludge at the bottom of the lagoons had been

allowed to accumulate over the years, the capacity of the system has been reduced by 50 percent. The system is now considered by IHS and the Environment Protection Agency ("EPA") to be overloaded. A major upgrade is needed to handle the current load and allow for community growth. (Feeney, 1986:6-14; Young, 1999; Wiseman, 1-24-2002; Scalpcane, 1-23-2002)

The Tribe has applied for a Community Development Block Grant of $1.16 million to improve the existing treatment system. However, the grant was rejected because a prior CDBG grant had not been properly closed out. This project would include the installation of an additional primary treatment pond and the installation of fermentation chambers. This will require the raising of the dike walls on the existing ponds and the installation of liners. IHS has provided some funding for this project. Approximately $350,000 in additional funding is necessary before this project can be undertaken. The above improvement is regarded as a short-term fix that is designed to carry the Tribe over for about the next ten years. In 2001, as a small part of this project, two of the three cells in the existing pond were dredged and six aerators were installed. (Scalpcane, 1-23-2002)

Over the long-term it is likely that a new treatment plant will be needed to accommodate population growth. It is estimated that a new plant will cost about $3 million. (Scalpcane, 1-23-2002; Wiseman, 1-24-2002).

Busby. The Busby community water system serves about 116 connections and draws water from two wells that are 260 and 280 feet deep. Each well yields water at a rate of 50 gpm. Five 20,000 gallon underground storage tanks were installed in 1997. (EPA, 1998a). The water in Busby is treated with a water softener and a venturi fluoridation unit. A new pump house and additional storage capacity is needed for fire protection and to provide for future growth. IHS estimates the cost of this additional storage at $170,000. (Scalpcane, 1-23-2002).

The Busby waste water treatment facility is an unlined two-cell lagoon system which was constructed in 1965 and expanded in 1982. The sewer system was last extended in 1990. Waste water is allowed to infiltrate into the ground so the plant operates as a large drain field rather than as a conventional wastewater treatment plant. (Scalpcane, 1-23-2002; Wiseman, 1-24-2002; Feeney, 1986:6-14).

Muddy. The Muddy Cluster community water system serves about 50 connections and draws water from a well that is about 125 feet deep. Water is stored in an above-ground 48,000 gallon steel tank constructed in 1975 and two 30,000 gallon underground fiberglass tanks constructed in the mid-1980s. Additional storage is necessary to provide water for fire protection and future growth. IHS estimates the cost of this additional storage at $170,000. In addition, the well is failing. Production has dropped from 65 gpm to less than 20 gpm today. The water in Muddy Cluster is naturally high in iron and is not drinkable. In 1999, a reverse osmosis treatment was constructed by IHS using funds from a Community Development Block Grant. The plant produces drinkable quality water for the Muddy community but is difficult and expensive for NCUC to operate. (Scalpcane, 1-23-2002; Wiseman, 1-24-2002; Bolar, 1995).

Because of the new treatment system is undersized in relation to demand, the quantity of water produced by the Muddy water system is now inadequate. Muddy Cluster residents at times experience low water pressure or receive no water at all. In July 2001, the Tribal President ordered mandatory water rationing which prohibited all outdoor uses of water, including watering of gardens, until issues relating to the reverse osmosis system could be resolved. These restrictions remain in effect. (NCT Administration, 2001; Scalpcane, 1-23-2002).

The Muddy Cluster waste water system is an unlined two cell lagoon. As at Busby, the facility effectively operates as a drain field as water is allowed to leach into the ground before it can be treated. IHS has rated this as a sanitation deficiency and has estimated the cost of renovation at $80,000. (Wiseman, 1-24-2002; Feeney, 1986:6-14).

Ashland. The Ashland community water system serves about 38 connections and draws water from a new well that is 110 feet deep with a yield of about 50 gpm. Water is stored in a 15,000 gallon steel tank constructed in 1970 and another 35,000 steel tank constructed in 1975. Although water quality was considered acceptable, IHS installed a reverse osmosis treatment plant in 1999. (EPA, 1998b; Wiseman, 1-24-2002; Scalpcane, 1-23-2002).

Although the reverse osmosis treatment plant has improved water quality immensely, the reverse osmosis facility has increased operation and maintenance costs. In addition, because the treatment plant is undersized, it has significantly reduced water availability to the point that Ashland residents living a higher elevations experience low water pressure or receive no water at all. In May 2001, the Tribal President instituted mandatory water rationing in Ashland prohibiting all outdoor use of water. This order remains in effect today. (NCT Administration, 2001).

The Ashland waste water treatment facility consists of an unlined two-cell lagoon constructed in 1969, which like the four other small systems on the Reservation, allows untreated waste water to drain into the ground. The Ashland facility is of greater concern because it is located immediately adjacent to the Tongue River. Waste water has been diverted to the cell farthest from the river to reduce possible impacts to water quality in the Tongue River. IHS regards the lack of treatment at the Ashland system as a “low priority” sanitation deficiency and estimates the cost of renovation at $100,000. (Feeney, 1986:6-14; Wiseman, 1-24-2002).

Birney. The Birney community water system serves 25 connections and draws water from a 80 foot deep well with a yield of 32 gallons per minute. The well was drilled in 1962 and the pump house was replaced in 1999. The system includes two 20,000 gallon underground storage tanks, which were installed in 1998. (EPA, 1998c; Young, 1999).

The water in Birney is naturally high in iron and is undrinkable. In 1999 a reverse osmosis water treatment plant was installed by IHS under a Community Development Block Grant. The treatment plant for the first time provides high quality drinking water to the Birney community. However, it has been difficult and expensive for the NCUC to

maintain. Moreover, the treatment system reduces the quantity of water available to the community to the point where some Birney residents receive no water at all. In August 2001, the Tribal President ordered mandatory water rationing prohibiting all outdoor use of water. This produces hardship for residents who rely on their gardens to provide food. Some Birney residents have moved their gardens to the banks of the Tongue River and now use river water for irrigation. (Wiseman, 1-24-2002; Scalpcane, 1-23-2002).

The Birney waste water treatment facility consists of an unlined two-cell lagoon with an unknown construction date and which, like the three other small systems on the Reservation, allows untreated waste water to drain into the ground. IHS regards the Birney lagoons as a sanitation deficiency and has estimated the cost of renovations at $100,000. (Feeney, 1986:6-14; Scalpcane, 1-23-2002).

B. Solid Waste.

Solid waste management on the Reservation is seriously deficient. The Tribe estimates that there are at least 20 open dumps on the Reservation. Historically, no Tribal agency has been in charge of solid waste management on the Reservation. Recently, the Tribe's Environmental Protection Department has become involved because the improper disposal of solid waste was leading to serious public health and environmental concerns. However, solid waste issues are still under the control of an ad hoc committee of the Tribal Council. (Millegan, 2-25-2002)

There are no sanitary landfills on the Reservation. The nearest sanitary landfills are in Hardin (about 58 miles from Lame Deer) and Colstrip (about 26 miles from Lame Deer). There is also no place on the Reservation to lawfully dispose of large items such as appliances and junk cars. The nearest salvage yard which accepts junk cars is in Hardin. (Bisonette, 2000:10; Millegan, 2-25-2002).

Most reservation residents haul their garbage and other waste to transfer stations that have been constructed by the IHS. Solid waste collected at these transfer stations is then transported by truck to sanitary landfills in Hardin or Colstrip. It is the Tribe's responsibility to operate these transfer stations. However, no federal funding is available for their operation and the Tribe does not charge a fee to users of the transfer stations. The Tribe contracts with a private waste hauler, CM Sanitation, to manage the solid waste transfer stations and take waste from the transfer stations to off-Reservation disposal sites. In the past, the contract did not clearly require the contractor to maintain the transfer stations and conditions at the stations were allowed to deteriorate. The most recent contract clearly requires CM Sanitation to maintain the transfer stations and provides the Tribe with remedies for default. However, the annual cost of the contract to the Tribe's is now $290,000 compared with $165,000 under the earlier contract. Of this amount, $40,000 will be provided by the Housing Authority, but the balance must be paid out of the Tribe's General Fund. (Bisonette, 2000:1-2, 6; Millegan, 2-25-2002).

The transfer stations are still in deplorable condition. No access controls are in place, and restrictions on the dumping of commercial, construction or industrial waste are

not enforced. Large items such as appliances and bed springs are often dumped at the transfer stations. The Lame Deer transfer station has been closed since about 1995 because the roll-off bins were burned so many times that the bins could no longer be used to transport waste to a landfill. Nevertheless, trash, junk cars and other waste continued to be dumped at the transfer station and it became an open dump. Environmental remediation at this site is estimated to cost $175,000. The Tribe hopes to receive a sanitation deficiency grant from IHS to complete this work. The work will not include rebuilding of the transfer station. (Bisonette, 2000:1, 12; Millegan, 2-25-2002) .

Until there is another option, Lame Deer residents will continue to haul their garbage to a transfer station at Muddy Cluster. The Muddy Cluster station was not designed to handle Lame Deer's garbage. The Muddy Cluster transfer station consists of a concrete headwall and one or two 40-cubic yard roll-off bins. The station is inadequate to handle the volume of trash deposited there and has also become an open dump. Garbage has been burned and buried at the Muddy Cluster transfer station (apparently by employees of CM Sanitation) to reduce the volume of garbage that would need to be hauled. The fence at the station is not adequate to contain windblown trash. The cost of cleaning up the Muddy transfer station is estimated to be $60,000, which will also be paid for from the IHS sanitation deficiency grant. This work will include the construction of an 8-foot chain link fence with two gates, reclamation and reseeding of the site, and the placement of a scoria base around the transfer station. (Bisonette, 2000:5, 12-13; Millegan, 2-25-2002).

The Busby transfer station is of similar design to the transfer station at Muddy Cluster. Like the Muddy Cluster transfer station, there is no fencing at Busby to capture windblown garbage and no access controls to prevent dumping of large items, resulting in an accumulation of trash around the transfer station. (Bisonette, 2000:5).

There is no transfer station near the community of Ashland. Residents of that community must haul their garbage 26 miles to the Muddy Cluster station. Some residents of Ashland choose to burn their garbage in backyard burn barrels or dump it illegally to avoid the inconvenience of transporting their garbage to Muddy Cluster. (Bisonette, 2000:7, 12).

A new transfer station at Birney was constructed by IHS in 1999. The station consists of some steps which allow residents to more easily dump their trash in the container. Heavy items are typically left outside the station. Collection of the bin is twice monthly and is not adequate to control vectors and odors. (Bisonette, 2000:5, 8; Millegan, 2-25-2002).

In addition to the public transfer stations, private garbage collection does exist on the Reservation. Residents, businesses and governmental institutions can contract directly with CM Sanitation for on-site collection of garbage. As a result of high transportation costs, on-site trash collection is relatively expensive on the Reservation. The cost of residential service ranges between $20 and $40 per month. Institutions such as the IHS, BIA and the Lame Deer School District also contract for private waste collection services. The cost to IHS for garbage collection at the clinic and at its 28 housing units is $44,000.

BIA pays $42,000 for trash collection at its office and maintenance facilities and 22 housing units. The Tribal Housing Authority similarly contracts for private collection service and provides this service at no charge to residents of low-rent housing. Each resident is provided with a 95-gallon bin which is collected once a week. The annual cost to the Housing Authority providing this service is about $40,000. The Tribe and Tribal enterprises such as the casino take their waste to the Muddy transfer station. Other businesses take their own trash to Colstrip to avoid high hauling fees. (Bisonette, 2000:3-4, 7; Millegan, 2-25-2002).

There is no curb-side or other recycling services on the Reservation and no programs are in place to reduce the volume of trash generated. Because the transfer stations are unsupervised, there is no ability to sort waste by type. Clean waste like concrete or wood is mixed with household waste resulting in much higher disposal costs. (Millegan, 2-25-2002).

The Tribe has applied for a Community Development Block Grant to construct a modernized transfer station in Lame Deer. The station would be manned and equipped with a compactor and a bailer. Waste would be segregated on site and recycling of certain items such as aluminum cans and household appliances would be provided. The Tribe estimates that it would cost approximately $1 million to construct this facility. The long-term plan would be to close the transfer stations and provide for curbside pickup in the five districts. (Millegan, 2-25-2002).

Even if such a modern waste handling facility were constructed, the Tribe does not have adequate resources to operate the solid waste management system. Currently, the entire cost of operating a solid waste management system must come from the Tribe's own diminishing General Fund resources. As shown in the previous chapter, these resources are plainly inadequate to pay the full costs of solid waste management on top of all other Tribal priorities. This is true whether management is contracted out or provided directly by Tribal government. While a user fee system could help defray the costs of solid waste collection and disposal, there is a significant danger that the imposition of user fees will lead to further increases in illegal dumping on the Reservation since a substantial number of households live on incomes well below the poverty line and cannot afford to pay for trash collection. (Millegan, 2-25-2002; Bisonette, 2000:6, 14).

III. Law and Justice.

The Northern Cheyenne Reservation has serious law and order problems. In 2000, there were 5134 arrests for minor crimes and 34 arrests for major crimes on the Reservation. This represents over one arrest for every person on the Reservation. There were also 22 incidents in which law enforcement officers were assaulted. The number of minor crimes increased sharply from 3399 in 1999 although the number of major crimes fell from 45. The number of juvenile crimes also increased in 2000 to 1133 arrests from 521 in 1999. Overall, both the adult and juvenile crime rate has risen steeply over the past few years. Table 5-1.

Table 5-1 – Arrests on the Northern Cheyenne Reservation by Year

	1997	1998	1999	2000
Adult	930	1807	3444	5168
Juvenile	130	373	521	1133

(BIA; Boys and Girls Club of Cheyenne Nation, 2002.)

Tribal law makes possession of alcohol a criminal offense. Consequently, intoxication and possession of alcohol are by far the most common crimes for which arrests are made on the Reservation. Of the 5168 arrests made in 2000, more than half were directly related to alcohol: 2003 for drunkenness, 538 for violation of the Tribe's liquor laws, 163 for DUI, and 284 for disorderly conduct. Alcohol-related crimes are a chronic problem with many repeat offenders. Police officials estimate that as much as 95 percent of the crime on the Reservation is alcohol related in some way. Decriminalization of alcohol on the Reservation would allow the police to focus on more serious crimes but also might increase the frequency such crimes were committed. Drug and alcohol recovery programs are discussed in Part V.B. below. (Naranjo, 1-24-2002; Melville, 1-24-2002).

A. Police Department.

The Northern Cheyenne Reservation Police Department is under the direct control and supervision of the BIA. Since the enactment of the Indian Country Law Enforcement Reform Act of 1996 (ICLERA), the Reservation police chief has reported directly to the BIA's district commander in Billings, instead of the agency superintendent in Lame Deer. The Lame Deer agency superintendent now has no authority over the police department or its budget. (WRICOPS, 2000:19; White, 1-08-2002).

During the 1970s and early 1980s, the Tribe administered the Police Department under a 638 contract with the BIA. Responsibility for the Police Department was retroceded back to BIA in about 1985. The Northern Cheyenne Reservation is one of only six reservations out of the 45 reservations under the jurisdiction of the BIA's Billings area office where direct responsibility for the Police Department still rests with the BIA. (Naranjo, 1-24-2002).

BIA funding for the Reservation law enforcement totaled about $1.4 million in FY 2001. BIA funding is supplemented by funding provided by the United States Department of Justice (DOJ) to the Tribe through the Office of Community Oriented Policing Services (COPS) for the Comprehensive Indian Resources for Communities and Law Enforcement (CIRCLE) pilot project. The CIRCLE pilot project has provided approximately $10 million over three years to the Tribe beginning in FY 2000 for the purpose of enhancing its existing law enforcement capability. Approximately $8 million of this grant has been allocated for a new juvenile rehabilitation facility, while the remaining funds have gone to strategic

planning, equipment, victim services, prosecution and court enhancement. The Northern Cheyenne Tribe was designated by Congress as an original participant in the CIRCLE pilot project. However, after FY 2002, Northern Cheyenne will have to compete with other tribes for available funds from this program. (Naranjo, 1-24-2002; Dahle, 1-24-2002).

The Police Department is managed by a chief of police who reports directly to the district commander in Billings. The police chief has considerable flexibility in the day to day operations of the Department and the design of the organization. The Department's command structure is simple and follows the traditional quasi-military model. Sergeants run the day to day operations although due to funding constraints a sergeant is not always on duty. The sergeants report directly to the police chief. Line officers are under the command and report to the sergeants. (WRICOPS, 2000:19).

Currently, the Department is staffed by 18 officers, including the chief of police, two sergeants and 15 line officers. Of the 18 officers, 13 are funded directly by the BIA and another five positions are Tribal employees funded by DOJ's COPS program. These COPS-funded Tribal officers are managed by and supplement the BIA's Northern Cheyenne Police Department under a memorandum of agreement between the Tribe and BIA. Tribal officers are not as well paid and, unlike regular BIA officers, do not enjoy many of the same benefits as the BIA officers even though they wear the same uniform. Tribal officers also are chosen by a different selection process than BIA officers and do not need to have the same qualifications as regular BIA officers. In addition, the Tribal police officers funded by the DOJ are not entitled to overtime pay. (WRICOPS, 2000:22; Naranjo, 1-24-2002)

In addition to the 18 uniformed officers, the BIA funds two criminal investigator positions, six dispatchers, six detention specialists, and two clerical staff. The senior criminal investigator position has been vacant for the last two years and the chief of police position has been filled in a temporary capacity since April 2001. (Naranjo, 1-24-2002; WRICOPS, 2000).

Funding for Reservation law enforcement activities has increased since the passage of ICLERA in 1996 and the inauguration of the CIRCLE project last year. However, Police Department staffing levels are still below those of the early 1990s and are still inadequate to meet the Reservation's needs. A police force of 18 officers is not adequate to cover an area the size of the Northern Cheyenne Reservation 24 hours a day, seven days a week. There are often times when the Police Department has only one officer on duty for the entire Reservation. (Naranjo, 1-24-2002).

Police protection on the Reservation is most inadequate outside of Lame Deer. In addition, the outlying communities place demands on the police for such services as delivery of food to elders. There are no police stations or substations in Muddy, Birney, Busby or Ashland. Unless an officer happens to be in the area, response times to the other districts range from 10 minutes to Muddy Cluster to as long as a half-hour in Birney and Ashland (in good weather). The BIA district commander believes that a uniformed police force of 25 to 30 officers would be needed to provide minimally adequate law

enforcement services in each Reservation community and that a police force of 50 officers would be ideal. (Naranjo, 1-24-2002; Melville, 1-24-2002).

The Police Department has recently upgraded its equipment although it is still substandard. Upgrades have included new police cruisers, a new security camera in the jail, new radio equipment, new body armor and weapons. Much of this upgrade was funded through the CIRCLE pilot project. However, police radios still need to be updated to include digital encryption, and a radio tower needs to be installed in the southeastern portion of the Reservation to provide police radio coverage in the Birney area. (Naranjo, 1-24-2002; Dahle, 1-24-2002).

Reservation law enforcement is still hampered by unresolved jurisdictional conflicts. Under Supreme Court precedent, Tribal courts have no criminal jurisdiction over non-Indians who commit crimes on the Reservation. *Oliphant v. Suquamish Indian Tribe*, 435 U.S. 191 (1978). Tribal police do not have authority to arrest non-Indians who commit crimes on the Reservation. However, Reservation police do have authority to detain non-Indians and turn them over to the appropriate off-Reservation law enforcement agency for possible prosecution. *Duro v. Reina*, 495 U.S.676 (1990). Non-Indians who commit misdemeanors on the Reservation must be turned over to the relevant county sheriff's department for prosecution in State court. Non-Indians committing felonies on the Reservation are turned over to the FBI for prosecution in federal court. The Reservation police process and hold non-Indians at the Reservation jail before turning them over to the county sheriff or the FBI for further action. However, the Montana Supreme Court has held that State courts lack jurisdiction over crimes committed by non-Indians on Reservations where the victim of the crime is an Indian. *State v. Greenwalt*, 204 Mont. 196, 663 P.2d 1178 (1984). (Naranjo, 1-24-2002).

Despite these jurisdictional gaps, the Northern Cheyenne Police Department has no written agreements with the sheriff's departments in Bighorn and Rosebud Counties. No cross-deputization agreements exist which would allow the Reservation police to enforce State law on the Reservation. Partnerships, such as mutual aid agreements, crime and drug task forces, and in the areas of training, investigations and information sharing, are also lacking. However, the Reservation Police Department is reported to have a good working relationship with law enforcement agencies on the Crow Reservation and in the neighboring counties. (Naranjo, 1-24-2002; WRICOPS, 2000:40).

State and County law enforcement officers typically maintain little or no police presence on the Reservation and do not routinely patrol State highways that cross Reservation lands. Although a State highway patrol officer is stationed in Colstrip, the next nearest officer is stationed in Miles City. As a practical matter, traffic enforcement is left to the Reservation police force, despite the fact that it has no authority to enforce State traffic laws against non-Indians. Non-Indian motorists stopped for traffic offenses are typically issued warnings rather than citations. For the most serious offenses, the Reservation police detain and turn over the offender to the county sheriff. (Melville, 1-24-2002).

In addition to areas within the jurisdiction of the Reservation police, there are several locations just off the Reservation which cause law enforcement problems for the Tribe. One location has been identified as a place where stolen property is sold, and another ("Jimtown") as a source of bar fights where Tribal members have been seriously injured. Jimtown, located just north of the Reservation along Highway 39 in Rosebud County, poses particular problems for the Reservation police. Reservation police are often dispatched to this location because they are much closer than Rosebud County sheriff's deputies. Reservation police have no formal agreement with Rosebud County and respond only because of their concern for the safety of Tribal members. Officers have complained that Rosebud County would not contact the Reservation police when Tribal members are found intoxicated and wandering near the Reservation. (WRICOPS, 2000:40).

The Police Department's reporting, record keeping and information management systems are inadequate, although they are reportedly improving. There is currently no records department and incident reports are not kept on file. Thus, there is no way to track the number of calls for service. A monthly report provides the number of arrests, but the Department conducts no formal crime analysis. As recently as two years ago, Tribal prosecutors were losing 75 percent of their cases at arraignment due to inadequate police reports. The situation has since been reportedly improved so that 90 percent of cases now plea out at the arraignment stage. (Melville, 1-24-2002: WRICOPS, 2000:29).

The Police Department has made an effort to implement Community Oriented Policing (COP) where police officers are more directly involved in addressing social problems in the community. However, a August 2000 assessment found that progress in implementing the COP philosophy was very slow and that no police officer had received COP training except for the Chief of Police. (WRICOPS, 2000:32)

B. Detention Facilities.

The Reservation operates a Detention Center which is managed by the BIA's Northern Cheyenne Police Department. It is currently staffed by six detention specialists. The facility has a capacity to hold 20 inmates, 14 male and six female. Both long-term and short-term detainees are housed at the facility. Four long-term inmates are currently being held at the facility, three of whom are serving three-year terms. In the past, the facility housed both juvenile and adult offenders, although only adult offenders are held there currently. (Russell, 1999; Melville, 1-24-2002).

The Detention Center was constructed in 1965 and was last renovated in 1986. The facility is clean and sanitary. Cells are 120 square feet and are located in cell blocks with day rooms, wet cells and one shower per block. There is a holding cell for intake and a cell with no furnishings that is used as a drunk tank. There are small outside recreation yards which are currently not used due to lack of adequate staffing to monitor inmates. There is a visiting room for non-contact visits which are held on Sundays from noon to 4 pm. Because of the facility's poor design, existing staff are unable to properly monitor all inmate cells on a regular basis. Staffing is limited to a single detention officer on most shifts. (Russell, 1999).

A new, larger facility is greatly needed to meet existing demands. The facility is often overcrowded at the present time and occasionally is severely overcrowded. When the number of detainees exceeds capacity, detainees are put on mats on the floor of the cells. The interim Reservation police chief estimates that the detention facility is overcrowded on average about five days per week. On one occasion in the recent past, 78 inmates were held at the facility at one time. The Department has to release non-violent offenders after each weekend to prevent severe overcrowding. New detention facilities on Indian reservations are typically funded by the United States DOJ. The DOJ, however, funded the construction of only five jails in Indian country nationwide last year. (Naranjo, 1-24-2002; Melville, 1-24-2002).

The Tribe currently lacks any dedicated detention facility for juveniles. The Detention Center has a holding cell where six juveniles can be kept on a short-term basis but no capacity for long-term juvenile detention. While juveniles have been housed at the detention center in the past, cells for juveniles have no sound separation and only minimal sight separation from adult offenders. The jail provides little or no regular supervision, no programs for juvenile offenders, no recreation, and no opportunity to address the problems that resulted in the youth being detained. Consequently, the Detention Center is used to house juveniles only on rare occasions. (Russell, 1999; Dahle, 1-24-2002).

The CIRCLE project recently committed $8 million for the construction of a 31,000 square-foot juvenile detention facility on the Reservation in Busby. To receive this award, the Tribe must provide an $800,000 matching contribution. The Tribe has applied for grants from the Economic Development Administration and other sources to help fund its share. Once constructed, the new facility will include a temporary holding unit, a 12-bed secure detention center for the most serious offenders, a 12-bed non-secure group home, a 12-bed mental health unit, a day probation facility, an alternative school, a vocational training center, a cadet training program, and an assessment center. The Tribe's drug and alcohol Recovery Center will operate out of the facility and the Boys and Girls Clubs will sponsor activities and services. The emphasis of the facility will be on treatment and rehabilitation. The BIA is supposed to fund the operations and staffing of this facility. If funding is secured, construction will start in May 2002 and will be completed in October 2003. (Zavlek, 2000; Dahle, 1-24-2002).

C. Tribal Court System.

The Tribe administers a court system on the Reservation under a 638 contract with the BIA. BIA funding for the Tribal Court in FY 2002 is $236,913. The Northern Cheyenne Court is separated into the Trial Court, the Appellate Court, and the Constitutional Court. Two Trial Court judges are elected for four-year terms, one of whom is appointed by the Tribal Council as the Chief Judge. The Clerk of Court is appointed by the Tribal Council. In addition, the staff consists of four Deputy Court Clerks, a process server, and adult probation officer, a family court coordinator, two juvenile probation officers, and an administrative clerk. The juvenile probation officers, the process server, and in part the family court coordinator are funded by the CIRCLE Project. The Tribal administration employs a Chief Prosecutor. There are no public defenders, although Montana Legal Services does provide assistance for indigenous clients in non-criminal adjudications. The

Court provides space for the attorney to meet with the clients on a weekly basis. (Robinson, 3-07-2002; NCT 2001d).

The physical facilities of the courthouse are extremely inadequate. It is a steel frame structure built in 1982 for a Court staff of five, so some of the Court staff must now be housed with the prosecutor, the Boys and Girls Club, and Tribal Health. The wiring and bathroom facilities are inadequate. The building is not secure, and there is no storage space. The Court rents a steel portable storage unit that is placed next to the Court. It has no electricity or heat. (Robinson, 3-07-2002).

The Tribal Court and Prosecutor have a huge criminal case load in comparison with off-Reservation jurisdictions of similar population size. In FY 2001, the Tribal court processed over 4,000 criminal arraignments, a number comparable to State courts in Billings, which has roughly 12 to 15 times the population of the Reservation. Approximately 65 percent of the arraignments are for possession of alcohol or intoxication. These are violations of Tribal law that would not be considered crimes in off-Reservation communities. These offenses are typically punishable by fines of between $20 to $200. (Wilson, 1-09-2002).

An average of five bench trials are held each month. There is an increase in requests for jury trials. Any person appearing before the court on a criminal charge has a right to a jury trial, provided that they will be incarcerated for the offense if found guilty. Approximately 15 to 20 jury trials are scheduled for one week per month, with three to four defendants actually going to trial. As of the winter of 2000, there was a huge backlog of criminal and civil cases. A new case management system has been implemented resulting in almost no backlog of criminal cases, and a reduction in time from up to a year from arrest to trial to currently 90 days. Civil and juvenile cases are being heard on a regular and timely basis, and final orders are now usually issued within 30 days. (Robinson, 3-07-2002).

The United States Supreme Court decided in *Oliphant* that tribes do not have criminal jurisdiction over non-Indians. A non-Indian who commits a crime against an Indian on the Northern Cheyenne Reservation will be tried before a Federal magistrate. If the victim is also a non-Indian, the State of Montana has jurisdiction to try the offender. The Northern Cheyenne Court will provide an opportunity for a non-Indian offender to waive his right to be tried before a Federal magistrate for offenses within the jurisdiction of the Tribe, and voluntarily accept the jurisdiction of the Tribe. If they elect not to do so, the Prosecutor of the Tribe will initiate an action to exclude the accused from the Northern Cheyenne Reservation. The Tribal court has been able to use the threat of exclusion to induce non-Indian offenders to voluntarily submit to Tribal criminal jurisdiction. However, this is a cumbersome process for addressing the jurisdictional gap and does not adequately protect the Reservation from lawless non-Indians, especially those who do not reside on the Reservation and for whom banishment is not a serious threat. (Robinson, 3-07-2002; Wilson, 1-09-2002).

As a result of the approximately 23 adverse decisions of the United States Supreme Court involving jurisdiction of Indian Tribes, it would be to the advantage of the Northern Cheyenne Tribe to initiate or to participate in government-to-government discussion and

negotiations to resolve jurisdictional issues. The Northern Cheyenne Reservation is approximately 98.5% tribal or tribal member owned, and the jurisdictional issues can be readily distinguished from those that arise on checkerboarded reservations. (Robinson, 3-07-2002)

In addition to its heavy criminal case load, the Court handled 261 civil cases in FY 2001. Off-Reservation and on-Reservation non-Indians and businesses filed their causes in Northern Cheyenne Court, with no challenges to the jurisdiction of the Court in FY 2001, and none to date in FY 2002. Only one enrolled member of the tribe who resides off of the Reservation has challenged the jurisdiction of the court. The complaints are for damages, debt collection, and contract enforcement. The Court enforces execution of judgments through contempt powers and, at rare times the Bureau of Indian Affairs Law Enforcement Services. Although the Northern Cheyenne Court enforces judgments from other jurisdictions, it has been reported to the Court that Northern Cheyenne Court orders are sometimes difficult to enforce off the reservation. (Robinson, 3-07-2002).

IV. Fire Protection.

The Northern Cheyenne Tribe administers a Fire Department using funds obtained from the BIA under a 638 contract. The total budget for the Fire Department is $91,000. The Department has only two paid staff, a fire protection manager, and an office manager. The fire chief and all fire fighters are volunteers. The BIA 638 contract is intended to fund a fire prevention and education program but is not intended to fund a volunteer fire department. However, because the Tribe has no tax base, it has no other source of revenue to fund the operations of the department. By contrast, the fire departments in Ashland and in rural areas of Big Horn County are State funded and the Colstrip fire department is funded through local property taxes. (Soldierwolf, 1-23-2002).

The Fire Department currently has 14 volunteer firefighters. There is a lack of funding for training, with only $2,500 budgeted for the entire department in FY 2002. With this budget, each volunteer firefighter can obtain only the minimum of 36 hours of basic training annually. Volunteers receive no specialized training and there are no emergency medical technicians (EMTs) in the Department. The Department's fire chief has some professional experience with the Belgrade, Montana and other fire departments. The Department could use at least $10,000 annually in additional funds for training. (Soldierwolf, 1-23-2002).

The current level of staffing is extremely inadequate for a community of the size of the Northern Cheyenne Reservation. The Fire Department responds to between 120 and 150 calls for service annually. By comparison, the fire department in Hardin, a community of similar size, has approximately 36 volunteer firefighters who form six teams which provide 24-hour on-call coverage. Unlike volunteer firefighters in Hardin and most other off-Reservation communities, volunteer firefighters on the Reservation do not receive any compensation for the time they spend on duty actually fighting fires. As a result of under-staffing and the lack of funding to pay firefighters for time spent on duty, it is very difficult

to keep enough volunteers on call. A house in Lame Deer recently burned down because there were not enough volunteers in town to respond to the fire. (Soldierwolf, 1-23-2002).

The Department has no funds available for purchase of new equipment and its FY 2002 budget for equipment maintenance and repair is only $10,000. Its equipment is all old and outdated. One of its fire trucks is over 40 years old; two others are approximately 30 years old. A 10-year old truck is currently on loan from the BIA. The Department has 30 protective suits that are all at least 12 years old and 15 breathing units that are at least 8 years old. Much of this equipment is surplus that was donated by the St. Labre Mission, which has its own well-equipped fire department. The Department needs at least two new functioning fire trucks, each of which costs approximately $100,000. (Soldierwolf, 1-23-2002).

A serious problem in Lame Deer is the lack of operable fire hydrants. Of the 65 total hydrants in Lame Deer, 25 do not work at all. Only seven yield more than 700 gpm and 18 yield less than 200 gpm. No Tribal agency is in charge of maintaining fire hydrants and no funding is allocated for this purpose. Where an adequate hydrant is unavailable, the Department must shuttle water from other hydrants or the town's water tanks. It takes an average of seven minutes to shuttle water to a fire in Lame Deer and as consequence buildings have burned down unnecessarily. During the 1990s, the Tribal Center and the Health Clinic were lost to fire. The closest hazardous materials teams are in Billings and Rapid City. (Soldierwolf, 1-23-2002).

Fire protection in the outlying districts is even worse than in Lame Deer. There are no fire stations except in Lame Deer. Response times for fires in other districts range from 5-10 minutes in Lame Deer, to 35 minutes in Busby and 45 minutes in Ashland and Birney. In 1998, part of the Tribal school in Busby was lost to fire. (Soldierwolf, 1-23-2002).

In September 2000, the Insurance Service Office gave the Tribe's Fire Department a ranking of "1" on a scale of 1 to 10. Fire insurance rates on the Reservation are among the highest in the State of Montana. (Matas, 2001).

V. Health.

Health care services on the Reservation are provided directly by the Indian Health Service (IHS) an agency of the U.S. Department of Health & Human Services which administers the Northern Cheyenne Community Health Center in Lame Deer, and since 1996, by the Tribe's Department of Health under an annual funding agreement with the IHS. Total IHS funding for health care services on the Reservation in FY 2000 was $14.1 million. Of this, $5.7 was provided to the Tribe under the annual funding agreement. Below we describe the services provided directly by IHS to the Reservation community and then the services provided by the Tribe.

A. Indian Health Service Programs.

Lame Deer Clinic. The Northern Cheyenne Community Health Center is located in Lame Deer, just north of U.S. 212. It was completed in July 1999 six months ahead of schedule at a cost of approximately $12 million. The prior IHS clinic in Lame Deer burned down in 1996. During the interim period, the IHS clinic operated out of trailers and other temporary facilities. (Littlewolf-Millegan, 1-10-2002).

The new Health Center provides free outpatient services to Northern Cheyenne Tribal members and other Indians living on or near the Northern Cheyenne Reservation. However, it is not a hospital. Native Americans needing hospital services and other critical care services, including kidney dialysis, must obtain them at the IHS Crow Agency hospital, 42 miles by road from Lame Deer, or at hospitals in Billings or Sheridan, Wyoming. (Littlewolf-Millegan, 1-10-2002).

The Health Center is triple the size of the prior clinic and includes an emergency room, an ambulatory outpatient treatment facility, a dental clinic, an optometry clinic, a physical therapy center, and a pharmacy. Since the new Health Center was constructed, staffing levels have more than doubled. IHS now has approximately 100 health care workers employed on the Northern Cheyenne Reservation. The Health Center is currently funded for seven medical doctors (one position is currently vacant), three nurse practitioners (two positions are currently vacant) and 13 registered nurses. An emergency room doctor and nurse assistance are now present on a 24-hour basis. The Health Center also employs a full-time optometrist, three dentists, two physical therapists, and three pharmacists. Although staffing levels have improved, the Health Center's ability to retain qualified staff, even where funding is available, is hampered by the lack of housing and other services in the town of Lame Deer. (Prairie Bear, 1-25-2002; Littlewolf-Millegan, 1-10-2002; IHS, 2002).

The inauguration of the new Health Center exposed a large latent demand for health care services on the Reservation. In the first year of its operation, the annual number of clinic visits increased by over 10,000. There were 64,022 patient visits to the Health Center in October 2000 through September 2001. Of these, 15,383 involved emergency room visits. The Health Center has a database for over 7,000 patients, suggesting that many Northern Cheyenne Tribal members living off the Reservation also have made use of the Center. (Littlewolf-Millegan, 1-10-2002; IHS, 2002).

Despite the major improvements in services, the Health Center is by no means sufficient to meet the health care needs of the Northern Cheyenne Reservation. The emergency room at the Health Center is not fully certified and lacks critical care facilities. X-rays and laboratory services are unavailable except during normal business hours. There is no kidney dialysis facility, despite the extremely high rates of diabetes on the Reservation. Tribal members must still travel off Reservation to obtain dialysis treatment,

as well as specialty care and treatment of medical conditions requiring hospitalization or other in-patient care. Staffing at the dental clinic is inadequate to meet the current demand for dental services on the Reservation. (Mexican Cheyenne, 1-25-2002; Littlewolf-Millegan, 1-10-2002).

Although the Health Center's primary mission is to provide health care to Native Americans, it is the nearest health care facility for significant parts of the rural areas surrounding the Reservation. For this reason, the Health Center does provide health care services to non-Indians, including limited services to non-Indian Tribal employees. The Center's emergency room is open to patients, Indian and non-Indian, who need emergency medical services. This includes persons involved in accidents on Reservation highways and residents of off-Reservation areas in the Tongue River Valley, including the communities of Ashland and Birney. Because the Tribe operates the only ambulance service in these communities, non-Indians in these communities who need emergency care are often taken to the Reservation health clinic. (Littlewolf-Millegan, 1-10-2002).

IHS's cost recovery system is less than adequate. Non-Indians are billed for the services they receive at the Health Center. For example, the clinic charges non-Indians a flat fee of $50 for an emergency room visit. Currently, however, little if any action is taken to collect on unpaid invoices that are not covered by insurance. The cost to the Health Center for the unreimbursed medical expenses of non-Indians is not a trivial amount. In the nine-month period from January through September 2001, the Health Center provided $54,578 in health care services to non-Indians for which payment has not been received. (Littlewolf-Millegan, 1-10-2002).

Contract Care. Health care services that cannot be provided at the Northern Cheyenne Health Center are referred out to other IHS facilities, such as the IHS hospital at Crow Agency. If the needed services are not available at an IHS facility, the patient is referred to a private off-Reservation health care provider under the IHS contract care program. The annual budget for all contract care on the Northern Cheyenne Reservation in FY 2000 was $2.28 million. This budget is set on the basis of a formula that allocating money appropriated by Congress for the entire nation. Funding levels do not guarantee that needs will be met. Program expenses routinely exceed budgeted funds. Funding for the current quarter which ends on March 31, 2002, ran out in mid-February. As of March 22, 2002, 34 cases qualifying for contract health care services were being deferred du to lack of funding. The entire program was $1 million over budget in FY 2001 and had to request emergency funding. (Littlewolf-Millegan, 1-10-2002; Mason, 3-22-2002; Whitewolf, 2002).

Due to the limited budget, contract health care must be rationed and denials of care are frequent. (Littlewolf-Millegan, 1-10-2002). Currently, the Contract Care program funds only urgent health care needs which involve life or death situations. More routine health care needs such as orthopaedic surgery, are not covered. Likewise, expensive treatments, such as organ transplants, are not covered even where they could save the life of the patient. (Mason, 3-22-2002)

B. Tribal Department of Health.

The Tribe's Board of Health oversees a number of additional health care services on the Reservation under contract with IHS which compliment the services provided directly by IHS at the clinic. These include emergency medical services, behavioral health services, public health nursing, environmental health services, health education, drug and alcohol recovery, nutrition, domestic violence services, community health representatives, the adolescent health center, and traditional medicine. The Board of Health also provides health care transportation and is responsible for health care planning on the Reservation. The total budget for these programs in Tribe's FY 2002 is $6.2 million, of which $5.8 million is provided for under an annual funding agreement with IHS. The remainder of the Board's funding is provided by other federal agencies and private foundations. Some specific programs are described briefly below.

Emergency Medical Services. The Tribe's Board of Health operates an ambulance service under contract with the IHS. Its FY 2002 budget is $321,666. The service holds an Advanced Life-Support Level, Ground Ambulance Service license issued by the State Department of Public Health and Human Services. (Spang, 1-25-2002; NCT Emergency Medical Services, 2001).

The Tribe's emergency medical services (EMS) program is staffed by three licensed paramedics. The director of the EMS program is EMT trained at an intermediate level and eight additional staff members are trained at an EMT-basic level. At current staffing levels, a licenced paramedic is available at all times on weekends and on weekdays from 8 am to 4 pm. This leaves 16 hours a day during which there is no paramedic coverage. The programs also have several volunteers on call who have some EMT training. (Spang, 2002; NCT Emergency Medical Services, 2001)

In FY 2000, the EMS program responded to a total of 1,286 ambulance calls. Of these, 715 were emergency calls and another 571 involved ambulance transfers to outside facilities. (NCT Emergency Medical Services, 2001)

The Tribe's EMS program's mission is to provide seven-day, 24-hour emergency medical services on or near the Northern Cheyenne Reservation. The EMS program serves both Indians and non-Indians and responds to service calls beyond the Reservation boundaries, specifically in off-Reservation communities in the Tongue River valley such as Ashland and Birney. The town of Ashland currently operates a quick response unit but has no ambulance service. The Tribe attempts to collect reimbursement for the cost of providing EMS services to non-Indians. A total of $100,806 in third party reimbursements were collected in FY 2000. Information on unpaid reimbursements was unavailable. (Spang, 2002; NCT Emergency Medical Services, 2001)

Behavioral Health Services. The Board of Health administers a Behavioral Health Services program which provides a range of mental health services from its offices in the IHS clinic at Lame Deer. Its FY 2002 budget is $644,744. The program is staffed by a full-

time director who is a licensed clinical psychologist, two mental health specialists and a medical social worker. A contract child psychologist is available on a quarter-time basis (10 hours/week) and a consulting psychiatrist is available for 12 four-hour, on-site visits per year. (NCT Behavioral Health Services, 2001).

Finally, the program provides consultation, education, and prevention-oriented services to the Reservation community. This involves gathering, organizing, and incorporating behavioral health information into interventions and communications with the target population. For example, this includes participation on the Tribe's child protection team and its domestic violence task force. (NCT Behavioral Health Services, 2001).

The Behavioral Health Services program handled 3,545 clinic visits in FY 2000. These included evaluations and assessments, psychotherapy, behavior modification, consultations with parents regarding child behavior and development, and psycho-educational activities to help patients cope with health problems where behavioral factors are an important component. The program also meets the need for court-ordered psychological and involuntary commitment evaluations. (NCT Behavioral Health Services, 2001).

The program has a definite need for additional staffing in the area of child psychology. The program's budget allows for retention of a child psychologist on a quarter-time basis only. Between January and October 2000, the child psychologist was responsible for 111 child clients in clinical situations which involved trauma, loss, and disability. (NCT Behavioral Health Services, 2001).

The program also provides very limited treatment for patients with serious mental illnesses. During FY 2000, 42 patients with serious mental illness were seen for a total of 91 psychiatric evaluations. Over 100 additional clients were treated at Behavioral Health Services for severe depression, schizophrenia, bipolar disorder and other serious mental illnesses. The program has very limited resources available to treat these patients as a psychiatrist makes only one four-hour visit to the Reservation every month. (NCT Behavioral Health Services, 2001).

Public Health Nursing. The Northern Cheyenne Board of Health's Public Health and Community Health Nursing programs provides services in the areas of communicable disease control, immunizations, maternal child health, podiatry and orthotics, and hospital discharges. The programs also provide home care to elders with chronic diseases and operates community health centers in Busby, Ashland, and Birney. The Tribe's FY 2002 budget allocates $159,919 for Public Health Nursing and $376,912 for Community Health Nursing. The programs currently have approximately ten registered nurses on staff. This represents an increase of seven nurses since the opening of the new Health Center in June 1999. In FY 2000, the Public Health Nursing program had 9,704 patient encounters which included 4,281 home visits. (NCT Public Health Nursing, 2001.)

Drug and Alcohol Recovery. The Department of Health operates an on-Reservation drug and alcohol recovery program. The program provides evaluation and assessments, treatment referrals, one-on-one and group counseling to both adolescents and adults, after-care planning and counseling, spiritual counseling, family counseling, and education. In FY 2000, the program provided services to 355 patients. Of these, 78 patients were adolescents. Only 42 of these patients were first time patients. (Bearcomesout, 2-26-2002; Northern Cheyenne Recovery Center, 2001).

The Tribe's program has a total budget of $887,923 in FY 2002 and a staff budget of $416,785 which allows it to fill 15 positions including nine counselors. Only six of the nine positions are currently filled. It has been difficult to retain certified counselors because the budget does not allow the Tribal program to pay competitive wages. Starting counselors earn $12 per hour or $24,000 per year. IHS pays counselors on the Crow Reservation as much as $35,000. There is also a problem with finding qualified Northern Cheyenne Tribal members to serve as counselors. Certification requires a college degree and Dull Knife College has discontinued its chemical dependency counselor education program. (Bearcomesout, 2-26-2002).

Despite huge problems with chemical dependency, the Reservation has no in-patient drug and alcohol treatment facility. Patients are referred out to facilities in Sheridan and Cody, Wyoming and Great Falls and Billings, Montana. There is a serious lack of funding for drug and alcohol treatment referrals. Drug and alcohol treatment at off-Reservation in-patient facilities costs approximately $220 per day. A normal course of treatment is 28 days for adults and 45 days for juveniles. Only $65,000 is available for adult counseling and $135,000 for adolescent counseling in the current budget. This allows funding for only 10 to 11 adults and 13 to 14 adolescents each year. As of February 2002, the program had exhausted all but $15,000 from its FY 2002 budget for adult treatment and half of its budget for adolescent treatment. In FY 2001, the program had to cut people off during the last four to five months of the fiscal year. Tribal members who are not able to obtain a referral from the Tribal program must try to obtain services through the State program, for which there is a long waiting list. (Bearcomesout, 2-26-2002).

Program administrators believe that the Tribe strongly needs an on-Reservation in-patient treatment facility. The existing out-patient facility is also inadequate as it operates out of a double-wide trailer. Substantial physical improvements are needed for the program to be fully accredited. The proposed juvenile facility in Busby may help address this need if it is constructed. (Bearcomesout, 2-26-2002).

Environmental Health Services. The Tribe's Board of Health and IHS jointly operate an environmental health and sanitation program which provides technical assistance to Reservation residents in addressing environmental health problems and in preventing these problems from occurring. The program has a staff of two, including the Tribal sanitarian and a environmental health technician. The program conducts inspections of food service operations, schools, child care facilities and group homes, as well as recreational sites such as PowWow grounds, parks, and picnic areas. In addition, the

program monitors drinking water systems, septic systems, and solid waste disposal sites. The program also helps to coordinate the response to petroleum product and hazardous materials spills. It is responsible for vector control, including rabies investigations and mosquito control. (NCT Environment Health Services, 2000).

Approximately 25 percent of all private septic systems on the Reservation are failing. The septic system for a day care center in Lame Deer is leaking and polluted water is running down the street. Inadequate resources are available to address these serious sanitation deficiencies. The IHS funds the initial construction of new septic systems for Tribal housing projects. However, IHS provides no funding for the upkeep of these systems or rehabilitation of failing systems. The upkeep of these systems is the sole responsibility of the home owner. Most septic systems have only a 20 year life before needing repair or replacement. (LaRance, 1-23-2002).

The Tribe's Environmental Health program has the resources only to monitor the status of septic systems and provide technical assistance to the owners of these systems. It has no resources available to underwrite the repair of these systems. In addition, the Tribe has no Health Code which would allow the Tribe to regulate private septic systems on the Reservation. (LaRance, 1-23-2002).

The Tribe is not well equipped to respond to spills of hazardous materials or petroleum products. The Tribe has no spill contingency plan. Although the Tribe has formed a Tribal Emergency Response Commission (TERC), the TERC is unfunded and has no professional staff. In practice, spill response is handled on an ad hoc basis by the Tribe's inadequately trained volunteer fire department and BIA road maintenance crews. Spill clean-up is contracted out to a firm in Billings through the Montana State Highway Department. (Soldierwolf, 1-23-2002; LaRance, 1-23-2002).

Medical Transportation. The Tribe's Board of Health operates a medical transportation program which provides some free medical transportation to Tribal members. Its total budget for FY 2002 is only $63,587 which means that this service must be rationed to those in the greatest need. The program's first priority is the transport of patients who need dialysis treatment. Transportation is available six days per week to and from dialysis centers on the Crow Reservation and in Billings. The program's second priority is transportation for IHS Contract Health services. Transportation service is provided two days per week unless IHS requests transportation on a different day. Transportation is also provided to patients referred by an IHS physician for urgent medical treatment at off-Reservation facilities. In addition, discharged patients may be transported from off-Reservation hospitals back to their homes on the Reservation if requested by IHS. The last priority is transportation of patients needing specialty care at the Health Center. The program provides transportation service in these cases only with a physician referral. (Gray, 2-26-2002; NCT Medical Transportation, 2000).

Due to budgetary constraints, the program no longer provides transportation to patients to the Health Center for medical appointments. The program also does not provide transportation for patients without appointments needing ambulatory care or persons requiring urgent care at the emergency room. These patients must provide their own transportation or rely on the Tribe's ambulance service. (Gray, 2-26-2002; NCT Medical Transportation, 2000).

The medical transportation program operates with 24 vehicles owned by the United States General Services Administration. One of these vehicles is stationed at Ashland and another at the Busby School where public health nurses have been stationed. The office has two permanent employees and 18 contract drivers who are employed on an on-call basis only. (NCT Medical Transportation, 2000).

In FY 2000, the medical transportation program carried a total of 6,010 patients. This included 1,568 patients transported for dialysis treatment, 479 trips for contract health services, 2,074 patients transported to on-Reservation medical appointments and 1,119 patients transported to drug and alcohol treatment programs. As noted earlier, however free transportation for most on-Reservation medical appointments and drug treatment is no longer available. (Gray, 2-26-2002; NCT Medical Transportation, 2000).

VI. Education.

A. Head Start.

The Tribe administers an on-Reservation Head Start program which is funded by the Administration for Children, Youth and Families, an agency of the United States Department of Health and Human Services, with a substantial in-kind match provided by the Tribe. Federal funding for FY 2002 is projected to be approximately $1.8 million. Funding levels are set according to a formula based on program enrollment which is updated annually. Additional funding of approximately $168,000 will be contributed by BIA under a 638 contract for the purpose of providing Head Start services to children with disabilities. (NCT, 2001b; Matas, 2001).

Head Start is a comprehensive child development program, which serves children from birth through age 5, pregnant women and their families. The Tribe's program is open to all Reservation households, both Indian and non-Indian, earning less than 250 percent of the federal poverty level. (Matas, 2001; Robb, 1-09-2002).

The Tribe operates eight Head Start centers, six in Lame Deer and one each in Busby and Ashland. Children from Birney are bussed to one of the Lame Deer centers. Each center operates a six hour per day pre-school program. In recent years, participation in the Head Start pre-school program has grown rapidly. The Tribe's Head Start program employs approximately 50 permanent staff. An additional 50 people are employed on a temporary or contract basis. Approximately 95 percent of the staff is Native American. (Robb, 1-09-2002).

Approximately 160 pre-school students are enrolled in the program, compared to only about 90 two years ago. The program is funded to serve up to 179 students. Although there is still excess capacity in the overall program, there may be waiting lists for enrollment in the Busby and Ashland centers. Parents with children on waiting list must provide their own transportation to get their children to another center. (Robb, 1-09-2002).

In addition to the pre-school program, Head Start participates in an early childhood screening program which funds development screening for children between the ages of 0 and 3. Tribal Head Start also operates a nutrition program which provides children with breakfast, lunch and snacks, and a dental education program. In partnership with the IHS, Tribal Head Start administers the "Healthy Children, Healthy Families, Healthy Communities" program to address diabetes among Head Start children, families, and staff. Northern Cheyenne children enrolled in Head Start suffer from obesity at a rate three times the average rate for other Indian children, which makes them vulnerable to diabetes later in life. This high rate of obesity is directly related to the high rate of poverty on the Reservation and the lack of availability of healthy foods. (Robb, 1-09-2002).

Head Start has also started a partnership with Chief Dull Knife College to develop a model program for identity-based education. The three-year grant of about $450,000, seeks to involve the community in educational policy and procedures and strengthen the social competence of children and families through increased focus on Cheyenne history, language and culture. (Robb, 1-09-2002).

B. Primary and Secondary Education.

Lame Deer High School. The Lame Deer School was established by the United States government in 1890 and is now a State-chartered school district. For many years, the district was solely an elementary school district which encompassed the on-Reservation communities of Lame Deer, Muddy Cluster and Birney. The current elementary school was constructed in the 1950s. Improvements to the elementary school were made in the 1980s using approximately $5 million in funds received from the Montana Coal Board. These improvements included the addition of five new classrooms, renovation of several additional classrooms, and construction of a new gymnasium, library, and 12 teacher housing units. (Feeney, 1986).

In 1991, Reservation residents filed petitions with the Superintendents of Schools of Rosebud and Big Horn Counties to establish a high school in Lame Deer. The proposed high school district was much larger than the elementary school district and included not only the Northern Cheyenne Reservation but also the off-Reservation communities of Ashland, Birney, and Kirby. The County Superintendents denied the petitions, but in 1993 the State Superintendent of Public Instruction reversed these decisions and issued an order creating the Lame Deer High School District. *Hayes v. Lame Deer High School Dist.*, 303 Mont. 204, 15 P.3d 447 (2000).

The Lame Deer High School opened in 1994 in portable classrooms. Construction of a permanent high school just south of Lame Deer was completed in 1997. Funding for the construction of the new high school was provided by Congress through a redirection of approximately $8 to $9 million in unexpended Federal Impact Aid dollars. These funds are used to compensate local communities for the loss of property tax revenues due to federal land ownership. The Tribe donated the land for the school to the Lame Deer High School District. (Williams, 1-09-2002).

Formation of the Lame Deer High School District was highly controversial and resulted in lawsuits from off-Reservation communities seeking to be excluded from the new district. In 1994, individuals in these off-Reservation communities petitioned their County Superintendents requesting transfer of territory from the Lame Deer High School District to the Colstrip and Hardin School Districts. The County Superintendents granted these petitions. The Lame Deer School District appealed these decisions to the State Superintendent of Public Instruction who reversed the County Superintendents' decisions. Court appeals by the off-Reservation communities were finally resolved by the Montana Supreme Court in the Lame Deer School District's favor in December 2000. *Hayes v. Lame Deer High School Dist.*, 303 Mont. 204, 15 P.3d 447 (2000). The off-Reservation communities remain within the Lame Deer high school district today. (Williams, 1-09-2002).

Notwithstanding the inclusion of non-Indian communities within the high school district, the school's student body is almost entirely Native American. Less than two percent of the students in the high school are non-Indian. Non-Indians within the district typically send their children to the off-Reservation high school in Colstrip. However, they no longer receive free transportation outside the district as a result of an injunction obtained by the Lame Deer High School District in February 2001 which bars other school districts from picking up students within Lame Deer School District's boundaries. (Williams, 1-09-2002).

Funding for the operation of the Lame Deer schools comes primarily from aid provided by the State and federal governments. The State provides direct aid to the school district based on the student population. State aid in the current school year amounts to $961,000 for the high school and $1.63 million for the elementary school. The Federal government also provides impact aid funding to the school district to compensate for the large amount of Federal land ownership in the district. The amount of Federal aid is related to both the school population and amount of the Federal lands within the district. This aid totals approximately $1.1 million for the high school and $1.5 million for the elementary school. (Mont. Office of Public Instruction, 2001; Williams, 1-09-2002).

The Lame Deer schools have a very small tax base due to the large amount of non-taxable, Federally-owned trust land within district boundaries. The elementary school district has a taxable property base with a total assessed valuation of only $221,000 and will derive only $12,300 in property tax revenues in the current school year (about 0.3

percent of total revenues). The high school district currently has a taxable property base of $1.38 million and will derive about $48,000 in property tax revenues in the current year (about 2.3 percent of total revenues). (Mont. Office of Public Instruction, 2001).

In addition to these sources of federal funding, in 2001-02 the Lame Deer schools will receive federal grants of approximately $286,000 under Title I of the Elementary and Secondary Education Act (Indian Education), another $136,000 under Title IX of the Act (Disadvantaged/Remedial), and $95,000 in funding for Part B special education. All of these programs are funded on the basis of student need. In addition to this additional federal funding, the district will receive about $140,000 in State aid for transportation. This funding is determined based on ridership and miles traveled. (Mont. Office of Public Instruction, 2001; Williams, 1-09-2002).

Finally, the Lame Deer schools also will receive an annual $400,000 grant from the United States Department of Education's 21st Century Learning Center. This money was awarded based on a competitive grant process and is being used to keep school facilities open after hours, support an alternative education program and fund a summer school. After next year, however, the money will flow through the State of Montana and the amount of the award will be reduced substantially to $25,000. (Williams, 1-09-2002).

Teacher salaries in the Lame Deer schools range from a starting salary of about $21,500 to a maximum of $40,300. These salaries are comparable to those paid in the Colstrip schools and are above the State average. The average class size is 14 students in grades K-5. The student body is almost uniformly poor with 94 percent of the students qualifying for free or reduced-cost school lunches. (Williams, 1-09-2002).

Current student enrollment in Lame Deer schools is 420 students in grades K-8 and about 220 in grades 9-12. Of these, about 60 students are enrolled in a newly established alternative school. High school enrollment has more than doubled over the past few years as a result of the District's policy of barring busses from the Colstrip School District from picking up children within Lame Deer district boundaries. The Lame Deer schools currently have no capacity to absorb additional students. (Williams, 1-09-2002).

The Lame Deer schools offer cultural programs including a required course in Tribal history and government as well as elective culture and language classes. Nevertheless, the entire school administration and a majority of the faculty is non-Indian. Only 25 percent of the high school faculty is Native American and this percentage drops to 10 percent or less in the elementary school. The district hopes to increase its Native American hiring. There is one fully certified Northern Cheyenne faculty member who teaches at the high school and another three Northern Cheyenne teachers at the elementary school. Language classes are taught by specially certified native Cheyenne speakers. (Williams, 1-09-2002).

Student achievement within the Lame Deer schools has been poor in comparison to State norms and even in comparison to other predominantly Native American schools. The Lame Deer schools are the lowest scoring schools in the State of Montana as measured on State standardized tests. In grades 1 through 6, 65 percent of student test scores in reading and math fell in the lowest achieving range and 89 percent fell below the 50th percentile. For high school students, similar results were reported. Average scores for 4th, 8th and 11th graders were well below the 50th percentile for both math and reading. The Lame Deer school has been placed on "school improvement" status until aggregate student scores improve to a 45 percent level over a two-year period. (Matas, 2001; Williams, 1-09-2002).

Under new education reform legislation recently enacted by Congress, the Lame Deer school district could be disbanded and taken over by the State if test scores do not improve to the 45 percent level in the next three to five years. The district has received a Comprehensive School Reform Grant of $240,000 from the Federal government to assist in raising achievement levels. This money is being used for staff development and to fund a reading program. At least some hope of future improvement can be found in the fact that the district's 1st grade students recently averaged at the 58th percentile on the national Terra Nova test. (Williams, 1-09-2002).

The high school graduation rate is currently about 71 percent. This is down significantly from the rates of 86 to 80 percent reported in 1997-98 and 1998-99 respectively. The drop out rate continues to be high. However, the school district is taking steps to reduce the drop out rate including the establishment of an alternative school funded through the 21st Century Learning Center. This includes a program of computer assisted learning, elective credits, and a less structured environment. The alternative school appears to be improving the high school retention rate and has resulted in increased school enrollment. (Matas, 2001; Williams, 1-09-2002).

Busby School. The Busby school was founded by the Bureau of Indian Affairs in 1904 and was operated by the BIA until 1972 as a K-12 day and boarding school for Indians. Since 1972, the Northern Cheyenne Tribe has administered the school under a 638 contract with the BIA. The Tribe's 638 authority has in turn been delegated to an elected school board. In the past, the school has suffered from severe physical deterioration and neglect. The dormitories were closed in 1981 because of their dilapidated and vandalized condition. The high school was closed in 1982 following findings by the IHS of serious health code violations and the loss of high school accreditation, mainly due to health and safety problems. (Feeney, 1986:6-29).

Although the school has regained its accreditation, infrastructure problems have only been partially addressed since the 1980s. The boarding school has not reopened. School buildings have undergone partial renovations since the 1980s but still pose many safety hazards, including the presence of asbestos. High school classes are still held in the same school building as the elementary school. There is little room for programs in home economics and industrial arts which are required for State accreditation. In 1998,

the school gym and administration building were destroyed by fire. Work is presently underway on a new gym and administration building and is projected for completion by September 2002. Funding for these construction projects has come entirely from insurance proceeds and the BIA Office of Facilities Management. The Busby School has received no construction funds from the Montana Coal Board. The school's most pressing infrastructure needs are renovations of classrooms and bathrooms in the existing school building and the construction of a separate high school. (Granbois, 3-01-2002)

Since about 1997, the Busby School's operating expenses have been funded by an annual grant provided by the BIA's Office of Indian Education under Pub. L. 100-297, rather than through a 638 contract. The school also receives grants for special education and gifted students from the United States Department of Education. The grants under Pub.L. 100-297 provide greater flexibility to Indian schools in the use of Federal moneys than a 638 contract. Grant amounts are based on the number of students enrolled in the last week of October. The grant for the current school year is approximately $2 million, down from about $3 million in the 2000-01 school year. The Busby school receives no State funds for operation and maintenance. (Granbois, 3-01-2002).

The decline in Federal funding for FY 2002 is the result of declines in student enrollment. The October 2001 enrollment was 221 students, down from 298 students in 2000 and 285 students in 1999. Declining enrollments are attributable to deterioration of facilities and the Busby's School's lack of amenities, such as sports programs and facilities. About half of the total student body lives on the Crow Reservation and about two-thirds of high school enrollment is from the Crow Tribe. Many of Busby's Northern Cheyenne students have transferred to the State-funded Lame Deer schools. The student body is very poor with about 97 percent qualifying for free or subsidized student lunches. (Granbois, 3-01-2002).

The Busby school has 16 certified teaching faculty, three of which are Native American. Class sizes range from 14 to 22 students in the elementary school and 15 to 30 in the high school. Teacher salaries range from $21,600 to about $39,000. The school curriculum includes mandatory instruction in the Cheyenne language in grades K-6 and elective language courses in grades 7-12. Courses in the Crow language are also offered. Cheyenne language instructors are certified through Dull Knife Memorial College. Data on standardized test scores for Indian schools has not been made available by the Montana Office of Public Instruction. School administrators believe that only about 30 to 40 percent of the student body tests at a proficient level. (Granbois, 3-01-2002).

St Labre. The St. Labre Indian School was established in 1884 as part of the St. Labre Catholic Mission in off-Reservation Ashland. The St. Labre mission is a non-profit Catholic charity that is governed by the Catholic Diocese of Great Falls, Montana. St. Labre provides a boarding and day school for grades K-12 at three campuses. The largest facility is located on a well-appointed campus located just off the Northern Cheyenne Reservation in the town of Ashland. Two smaller campuses are located on the Crow Reservation. (Feeney, 1986:6-30; Matas, 2001:70; Yarlett, 1-10-2002).

The operations of the St. Labre school are funded largely by private charitable donations, although the school receives federal money through the subsidized school lunch program. St. Labre conducts an extensive direct mail operation and may be the largest mailer in Montana. It has a total annual budget of $25 million. St. Labre has approximately 300 employees on the three campuses with about 220 employees at the main campus in Ashland. (Yarlett, 1-10-2002; Alexander, 1-10-2002).

Total student enrollment for the St. Labre school in Ashland is 520 students. Approximately 160 students are enrolled in the high school, approximately 65 percent of whom are Northern Cheyenne. About 30 percent of the high school students are members of the Crow Tribe. Enrollment in the elementary school is approximately 70 percent Northern Cheyenne. About five percent of the student body is comprised of non-Indian children primarily of faculty and staff. (Yarlett, 1-10-2002; Alexander, 1-10-2002).

Tuition is free to all who enroll. St. Labre also provides a free breakfast and lunch to all of its students as well as free transportation. A free dinner is provided to students who board at the school and those with evening activities. (Alexander, 1-10-2002).

The St. Labre school has no admission requirements, although students with more than ten unexcused absences per semester are dropped from the student rolls. Elementary school enrollments are rising rapidly, increasing by 50 students this past year alone. St. Labre administrators attribute this increase in enrollment to the policy adopted by the Lame Deer School District barring school busses from the Colstrip School District from serving the Lame Deer community. Rather than sending their children to the Lame Deer school, many Cheyenne elect to send their children to St. Labre which has a better academic reputation. As a result of these increases in enrollment, St. Labre is no longer able to accept all students who apply. The elementary school is full. This school year, the school was not able to accept the applications of approximately 25 prospective students. (Alexander, 1-10-2002).

The student body is becoming increasingly composed of the least needy and relatively most privileged students on the Reservation. For example, about 75 percent of St. Labre students now qualify for the free school lunch program. While high in relation to State averages, this figure has been dropping and is now substantially less than other schools on the Reservation. This is a concern for St. Labre which sees its mission as providing education to the most needy Indian students. (Alexander, 1-10-2002).

The St. Labre school has 57 certified teachers on staff, six of whom are Native Americans. One elementary school teacher is an enrolled member of the Northern Cheyenne Tribe as are two in the high school. Salaries for teachers range from about $23,000 to $48,000, which is somewhat higher than for public schools in the State. (Alexander, 1-10-2002).

The curriculum at St Labre is conventional except for religion classes and mandatory attendance at religious services every other week. The school also offers classes in Native American art, literature, history and government. Cheyenne language instruction is offered in both the elementary school and the high school. (Alexander, 1-10-2002).

The high-school drop out rate is about five to seven percent. A student is counted as dropping out if the student leaves without a request for forwarding of a school transcript. The student transfer rate is high. As a consequence, the high school has 50 freshmen but only 25 seniors. Student test scores at St. Labre are the highest of any Indian school in Montana although they are still below an adequate level. Test scores are higher in the elementary school with K-4 students testing at about grade level. (Alexander, 1-10-2002).

School administrators believe that drugs and alcohol are less of a problem at St. Labre than in Reservation schools. This is partly because the student body at St. Labre is weighted toward children from the most stable families on the Reservation. Overall, drug use seems to be declining among students, although children may be starting to use drugs at an earlier age. (Alexander, 1-10-2002; Yarlett, 1-10-2002)

Off-Reservation Public Schools. A significant number of Northern Cheyenne students attend school in the off-Reservation public schools in Colstrip. Currently, 249 Indian children are enrolled in the Colstrip school system out of a total student enrollment of about 816. Thus, over 31 percent of the enrollment in the Colstrip schools is Native American. Although enrollment statistics broken out by Tribe are not available, it is reasonable to assume that most of the Indian children enrolled at Colstrip are Northern Cheyenne Tribal members. (Nygaard, 1-24-2002).

The number of Northern Cheyenne Tribal members enrolled at Colstrip has remained high despite significant new barriers erected to keep Northern Cheyenne children enrolled in on-Reservation schools. Recently, the Lame Deer School Board exercised its rights under Montana law to disallow students residing within the district from receiving free transportation to out-of-district schools. Thus, Reservation residents must make private transportation arrangements in order to send their children to the Colstrip schools. Northern Cheyenne parents have formed carpools to transport their children to Colstrip and a group of parents even purchased a school bus. (Nygaard, 1-24-2002).

The popularity of the Colstrip schools on the Reservation results in substantial part from the superior facilities and programs offered at Colstrip in comparison to schools on the Reservation. The Colstrip schools are quite well funded. For the 2001-02 school year, the Colstrip school district budgeted $4,126,445 for its elementary school and $2,694,742 for its high school. (Colstrip School District, 2002).

The Colstrip school district receives four main types of revenues. Approximately one third of the district's operating revenues come from State dollars that are received by all State school districts in Montana. Another third of the operating budget is generated by local tax levies. Colstrip schools benefit from a substantially larger and more secure tax base compared to other schools in Montana due to the presence of four large coal-fired power plants. Because the lion's share of the assessed valuation in the district is associated with the power plants, the Colstrip school district can generate substantial tax revenues while keeping its tax rates relatively low. The final third of the district's operating budget is non-levy revenue. An important portion of this non-levy revenue comes in the form of federal impact aid which the district receives in part due to its large enrollment of children from the Northern Cheyenne Reservation. (Colstrip School District, 2002; Nygaard, 1-24-2002). Finally, the Colstrip schools receive construction funding from the Montana Coal Board. As of 1985, the Colstrip school system had received over $8 million in funding from the Coal Board for new school facilities and equipment. (Feeney, 1986:6-31).

Currently, the major problem at Colstrip is declining enrollments which have resulted in a decline in State school support dollars. Since 1990-91, total enrollment has dropped from 1,400 students to just under 816 students today. Declining enrollments are attributable in large part to the boom and bust cycle of energy development. Because there has been little new energy development at Colstrip since the late 1980s, the transient population has moved elsewhere and the remaining population is ageing and producing fewer school-aged children. The Colstrip school district is currently closing one of its schools and has been laying off teachers in response to funding shortages resulting from declining enrollment. (Colstrip School District, 2002; Nygaard, 1-24-2002).

C. Post-Secondary Education.

Dull Knife College. The Tribal Council chartered Dull Knife Memorial College ("CDKC") in 1975 and changed its name to Chief Dull Knife College (CDKC) in 2001. Its original program was to provide vocational training for mining-related jobs in communities near the Reservation. Academic courses were first offered in 1978. CDKC has greatly expanded its curriculum since that time and now offers Associate of Arts degrees in general studies, early childhood education, special education, agriculture, biology/pre-med, Native American studies, and computer science. Dull Knife also offers Associate of Applied Science degrees in office management and business. (Feeney, 1986:6-31; CDKC, 2001a).

CDKC operates on a small campus just east of Lame Deer. The heart of the campus is three interconnected buildings with approximately 27,000 square feet of classrooms, laboratories and offices. There is also an auditorium, a distance learning lab where students can take televised classes, a cafeteria, a bookstore, and the Tribal business information center. A separate building houses the student lounge, a computer-

equipped classroom and additional office space. Another building of about 2,500 to 3,000 square feet houses the Woodenlegs Library. A newly renovated building of about 5,000 square feet is the site of the Cultural Center.

CDKC's general fund budget for FY 2002 is $1.65 million and is funded primarily by the BIA. The largest source of funding ($656,000) is provided under a 638 contract between BIA and CDKC which is used to pay faculty salaries. Funding under the 638 contract is based on proposals submitted by the college to the BIA and does not automatically increase with the level of enrollment. Another $539,000 is provided by the BIA's Office of Post-Secondary Education under the federal Tribally Controlled Colleges or Universities grant program, Pub. L. 95-471, 25 U.S.C. §§ 1801 *et seq*. Funds awarded under the Tribally Controlled Colleges grant program are awarded on the basis of a formula which takes into account the number of Indian students enrolled in the college. Total enrollment at the college is currently 198 students. Eighty-nine students are enrolled full time and 109 students are part time. (CDKC, 2001b; Cattrell, 1-09-2002).

Enrollment is open to both Indians and non-Indians. Approximately 15 to 17 percent of the student body is non-Indian. CDKC is supposed to receive $1,500 from the State of Montana for each non-Indian student enrolled on a full-time equivalent (FTE) basis. However, the State Legislature does not always fully fund this obligation. For FY 2002, funding from this source is projected to total $31,500. CDKC's operating expenditures typically range from about $9,500 to $10,500 per FTE. This is about $2,000 higher than the national average expenditure for community colleges and is attributable in part to the College's geographic isolation and the region's relatively cold climate. The nearest off-Reservation community colleges are in Miles City and Sheridan, Wyoming. (CDKC, 2001b; Cattrell, 1-09-2002).

The college also receives revenues from tuition payments which are set at $60 per credit hour. Tuition waivers are given to Tribal elders and college staff. CDKC also charges rent to a food concessionaire who operates the school's cafeteria. CDKC expects to receive approximately $190,000 from tuition and rents in FY 2002. (CDKC, 2001b; Cattrell, 1-09-2002).

In addition to its general fund budget, CDKC obtains substantial additional funding for special projects. In FY 2002, special project funding is projected to total $3.08 million. The largest single source of funding is a one-time capital construction grant of $1.3 million provided by the Lilly Foundation which was used for building renovations and the new Cultural Center. (CDKC, 2001b; Cattrell, 2-25-2002).

CDKC is considered a land grant college and will receive approximately $400,000 from the Department of Agriculture's $50 million annual appropriation for Indian colleges. This funding is used to operate an agricultural extension office, help fund the distance learning center which offers televised agriculture courses, and support the Tribal business information center. (CDKC, 2001b; Cattrell, 2-25-2002).

CDKC also receives other grants from the Federal government for such programs as special education. Finally, CDKC receives grants from private foundations, which include a $100,000 grant from the Packard Foundation to support science internships and a grant of $254,000 from the National Science Foundation's Rural Systemic Initiative earmarked for programs to teach elementary and secondary school teachers about how to teach science to students. (CDKC, 2001b; Cattrell, 2-25-2002).

CDKC operates a scholarship program which is funded by a $50,000 grant from the American Indian College Fund and about $90,000 to $100,000 per semester in assistance from the Federal Pell Grant program. Other small amounts of scholarship money are available from private sources and is available from year to year. The college also receives money to operate in-house and Federal work study programs. (Cattrell, 2-25-2002).

As indicated above, CDKC operates the Tribal Business Information Center ("TBIC"). The TBIC has operated for about four years and is funded by a $48,000 Department of Agriculture grant and with sporadic additional support from the U.S. Small Business Administration. The TBIC serves as a resource to Tribal members hoping to start businesses on the Reservation. It includes a reference library on business, internet access, and technical assistance with the development of business and marketing plans. The program has helped about six or seven Tribal members start functioning businesses since its inception. There is currently no coordination between the TBIC and the Tribe's Economic Development office. (Cattrell, 2-25-2002).

CDKC operates the Woodenlegs Library which has been designated as the Tribal library and is a very important community resource. Like the college itself, the library is funded primarily by the BIA under Pub. L. 93-638 and the Tribally Controlled Colleges grant program, Pub. L. 95-471. The library is generally open to the public although it is closed in August and on all evenings and weekends. The library has a large archival collection relating to Cheyenne history, language and culture and acts as a repository for Tribal oral histories. CDKC also operates a profitable on-campus bookstore which is used to subsidize the operations of the College's day care center. (Cattrell, 2-25-2002).

Scholarship Program. The Tribe administers a college scholarship program which is funded by the BIA under a 638 contract with total funding in FY 2002 of $420,000. The Tribe supplemented the BIA funding with $50,000 from its General Fund in FY 2001 but Tribal funding was eliminated in FY 2002. (NCT, 2001b) The St. Labre School also operates a college scholarship program for its own graduates. Approximately 25 to 30 Northern Cheyenne are receiving college scholarships under the St. Labre program, with awards ranging up to $4,000. St. Labre also operates a mentor program for St. Labre graduates who are attending college to provide support and increase retention rates.

VII. Social Services.

Responsibility for providing social services on the Reservation is fragmented among a number of Tribal programs and the State of Montana. Social welfare programs originating with the BIA are administered by the Northern Cheyenne Social Services Department under a 638 contract with a total budget of approximately $1 million. These include an Indian cash assistance program ("General Assistance") and several programs relating to the care and protection of children. The State of Montana runs the major national welfare programs on the Reservation including the Temporary Aid to Needy Families ("TANF") and Food Stamps programs. The Tribe operates a commodities program, a low-income energy assistance program, and programs to assist Tribal elders. For the purpose of this discussion, social welfare programs on the Reservation are described by category, rather than by agency. Five categories of social welfare services are discussed: cash programs, energy programs, food programs, child welfare programs, and elder programs.

A. Cash Assistance.

General Assistance/Tribal Work Experience Program. The Tribe's Department of Social Services administers the General Assistance program under a 638 contract with the BIA. General Assistance provides financial assistance to needy Native Americans living on or near the Reservation who meet income guidelines set out in BIA regulations, but do not qualify for other welfare programs such as TANF, the main national welfare program. Native American people who have been sanctioned for failure to fulfill TANF work requirements are ineligible to receive General Assistance payments from the Tribe. Non-Indians are not eligible to participate in the General Assistance program. (Matas, 2001:61; NCT Social Services Department, 2002).

Like other cash assistance programs in the era of welfare reform, General Assistance recipients must now work 40 hours per week to receive their monthly benefit of $285. Recipients needing to fulfill these requirements are placed with Tribal programs and enterprises. Recipients may fulfill their work requirements by providing assistance to elders or by providing child care for other General Assistance or TANF recipients. General Assistance recipients may also fulfill their work requirements by studying for a GED in the Adult Education program at Dull Knife College. (NCT Social Services Department, 2002; Shoulderblade, 1-23-2002).

The Tribal Work Experience Program ("TWEP") is administered by the Tribe's Department of Social Services. Under TWEP, the Tribe is able to provide an additional $115 per month work-incentive bonus to General Assistance recipients who fulfill their work requirements. (Shoulderblade, 1-23-2002).

The Tribe is required by its 638 contract to impose sanctions on General Assistance recipients who fail to meet the program's work requirements. Under the mandatory sanctions regime, General Assistance recipients are suspended from the General

Assistance program for 30 days the first time they fail to meet their monthly work requirement, 60 days for the second offense, and 90 days for the third offense. (Shoulderblade, 1-23-2002).

General Assistance case loads have dropped dramatically in recent years. The current case load is only 63 clients. This is down from 3304 clients in 1993 and 843 clients in 2000. The Social Services Department attributes the sharp drop in case load to two major factors. First, TANF rules now allow men and couples with children to receive welfare benefits. This has expanded the number of Indians on the Reservation who are eligible to receive TANF assistance and thereby reduced the number of people qualifying for General Assistance. Second, a large majority of former General Assistance recipients have been unable or unwilling to satisfy the new mandatory work requirements and have dropped out of the program. Lack of transportation and affordable child care are the two main reasons why recipients have been unable to meet the work requirements. (Matas, 2001:61; NCT Social Services Department, 2002; Shoulderblade, 1-23-2002).

General assistance is not an entitlement program. Program funding levels are set by Congress and then allocated among different Tribes has the BIA according to Reservation population and other factors. Where funds are insufficient, benefits can be cut or eligibility criteria tightened. For example, four years ago the Tribe eliminated employable 18-year olds living at home from the program due to a shortage of funds. Estimated annual expenditures for FY 2002 for both General Assistance and TWEP will be $217,000. These funds should be sufficient to meet the current case load which has been reduced by work requirements and changes in eligibility criteria. (Matas, 2001:61 NCT Social Services Department, 2002; Shoulderblade, 1-23-2002).

Temporary Aid to Needy Families. The Temporary Aid to Needy Families ("TANF") was formerly known as Aid to Families with Dependant Children ("AFDC") and provides cash assistance to low-income families with dependant children. The program is administered by the Montana Department of Public Assistance, which has a part-time office in Lame Deer. With the advent of welfare reform, federal law requires recipients to meet strict work requirements in return for cash assistance. Single recipients must work 30 hours per week and recipients in two parent households must work 35 hours per week.

The Tribe's Job Training office operates a program funded by the United States Department of Health and Human Services that is charged with administering the TANF work requirements for all Tribal members living on the Reservation. The program is staffed by a quarter-time director and a full-time case manager. In addition to enforcing the TANF work requirements, the office also attempts to place TANF recipients in employment with various tribal programs and enterprises. (Whitewolf, 1-08-2002).

The Tribe's Job Training office administers TANF requirements using the following protocol. The office will first send a warning letter to Tribal members who do not comply with TANF work requirements giving them ten days to come into compliance. If there is no compliance, a second letter is sent. Failure to comply after the second letter may result in a sanction terminating the offending parent's portion of the TANF benefit for 30 days.

The next sanction terminates the parent's portion of the TANF benefit for six months, and the third sanction terminates assistance for a year. The Tribal program is charged with a duty to report all instances of TANF non-compliance to the State for imposition of the sanctions. (Whitewolf, 1-08-2002).

Welfare Reform. At the same time the Tribe is operating a program to administer the TANF work requirements, the Tribe's Department of Social Services is administering a program funded by the State of Montana to provide assistance to TANF recipients who must meet the new requirements of welfare reform. The program employs a social worker who acts as an advocate for recipients who are threatened with sanctions and provides transportation to ensure that recipients make their appointments at the welfare office. Funding for this program is discretionary and will be cut from $100,000 to $47,000 in 2002. (Shoulderblade, 1-23-2002)

The Tribe's Social Services Department believes that welfare reform on the State and national level will soon begin to affect social services on the Reservation. Many Indians living off the Reservation will soon be subject to the five-year lifetime cutoff for TANF benefits. However, Indians living on or near the Reservation are exempt from the lifetime cutoff. As Tribal members living off-Reservation reach the cutoff point, they will have an incentive to return to the Reservation in order to continue receiving welfare benefits. If this occurs, it will increase the burden on already overtaxed Reservation services such as housing, health care, criminal justice and education, among others. (Shoulderblade, 1-23-2002).

B. Energy Assistance.

A majority of Reservation households live in modular homes constructed by federal housing programs 20 to 30 years ago. These homes were not designed for the cold winters prevalent in Montana. Most of the houses were built with 1/4-inch roof underlayment and do not have proper insulation in the walls. Houses built during the 1970s generally have propane heat. Houses built after the 1970s all have electric heat, with the majority using baseboard heat. In the winter of 2000-01 propane cost up to $1.79 per gallon and the average monthly electric bill was $90 per month. (NCT LIHEAP, 2001b: 9, 11).

Low Income Home Energy Assistance Program. The Tribe administers a Low Income Home Energy Assistance Program ("LIHEAP") which is funded by the United States Department of Health & Human Services. The program provides energy assistance to households with income levels below 150 percent of the poverty level. Households in which one or more individuals receive welfare benefits from the State, supplemental security income payments, or food stamps are automatically eligible to receive benefits. The benefits provided by LIHEAP are set on a sliding scale depending on income and household size. Maximum benefits are $695 per heating season for households with propane, 70 percent of the electricity bills for households with electrical heat, and free wood for households heating with wood. The program also provides crisis assistance to

persons needing window or furnace repairs, space heaters, or one-time assistance to those without fuel or facing immediate shut off of electrical service. At least 40 electrical meters were shut off during the winter of 2000-01 for non-payment. (Manley, 1-08-2002; NCT LIHEAP, 2001a; NCT LIHEAP, 2001b:11).

In FY 2001, LIHEAP received federal funding of $222,507 and the Tribe contributed an additional $15,000 from the Tribe's General Fund. Eighty-eight percent of the program's federally funded budget is allocated to reimbursement of heating costs, two percent to energy crisis assistance and ten percent to administrative costs. All of the Tribal funding is devoted to energy crisis assistance. The level of federal funding is based on the Reservation's low income population as determined by United States Census data. The program assisted over 230 households in 1997-98, 248 households in 1998-99, and 391 households in 1999-2000. Given the large household size on the Reservation, this means that the program may serve as many as 1,500 to 2,000 people on the Reservation. (NCT LIHEAP, 2001a; NCT LIHEAP, 2001b:15).

Funding is not adequate to meet the need for energy assistance on the Reservation. In 1999-2000, 120 households were denied regular assistance due to incomplete applications or exhaustion of funds and the Tribe provided emergency energy assistance to over 130 households. During the winter of 2001-02, approximately 20 households were denied assistance in the first two weeks after the December 2001 cut-off date for eligibility had passed. Case loads have increased substantially in recent years, but funding levels have not kept up with demand. The program is not able to service further increases in the number of eligible households without new funding. (Manley, 1-08-2002; NCT LIHEAP, 2001b).

REACH Project. In 2001, the Tribe's LIHEAP program was awarded a 17-month REACH grant of $150,000 by the United States DHHS. The program will install energy efficient lighting, replace old thermostats and furnaces with new energy efficient models and provide weatherization assistance. The program will also replace other energy consuming appliances such as ranges and refrigerators. Native American households which are eligible to receive LIHEAP funding will be eligible to receive special assistance under the REACH program. Most of the Reservation population is not yet aware of this special program so participation is still low. (Manley, 1-08-2002; NCT LIHEAP, 2001b).

C. Food Assistance.

Commodities. The Tribe runs a Commodities program which is funded by the United States Department of Agriculture ("USDA") through the State of Montana Food Distribution Office. Although the Tribe would qualify for direct federal funding as an Indian Tribal Organization, the Tribe still submits its budget requests to the State's Food Distribution Office which then passes the request along to the USDA as part of the State's overall budget request. The Tribe's program administrator believes that his funding requests are often reduced by the State before submission to the federal government. (Russell, 1-24-2002).

USDA funding is based on a formula which takes into account the projected participation in the program. In order to receive these Federal dollars, the Tribe makes a 33 percent hard dollar match from its General Fund. The current budget for the program is $178,730, which includes $59,700 contributed by the Tribe. Funding is used to cover the costs of distribution and program administration. The commodities themselves are provided by the USDA. (Russell, 1-24-2002).

Native Americans living on or near the Reservation are eligible to participate in the program if they meet income eligibility guidelines. Unlike General Assistance, TANF, or Food Stamps, there is no work requirement. Up to 72 items are available including canned vegetables, meats and fruit, cereals, frozen meats, some fresh vegetables and fruits. The quality and variety of foods has improved in recent years. Commodities are distributed daily in Lame Deer, except during the last three days of the month. The program makes deliveries to elderly and handicapped recipients in outlying areas. Commodity distributions meet USDA guidelines, but no special guidelines are followed when serving individuals with special dietary needs. (Russell, 1-24-2002).

A total of 698 individuals currently receive commodities from 198 total households. This number ranged as high as 901 individuals in 1999-2000. A total of 238 households have been certified as eligible to receive commodities. This compares to only 46 eligible households certified in 1990. The dramatic increase in participation in the Commodities program has been attributed to increasingly stringent eligibility requirements for other welfare programs such as General Assistance, TANF and Food Stamps. Needy Tribal members who are unable to meet Federal and State eligibility requirements have turned to the Tribe's Commodities program as a safety net of last resort. (Russell, 1-24-2002 Matas, 2001:63).

Community Service Block Grant. During FY 2001, the Tribe administered a Community Service Block Grant of $38,000 which was awarded by the United States Department of Health & Human Services. Moneys from the block grant program are used to alleviate barriers to access to other assistance programs and to provide emergency food vouchers to any needy Indian household on the Reservation whose welfare payments have been terminated or are insufficient, and which has applied for but not yet received food stamps or commodities. Typically, this provides assistance to households on fixed incomes during the third or fourth week of the month when money from welfare or Social Security payments has run out. The food vouchers range from $15 for a household with one to three members to $35 for a household with five members. Approximately 100 households participate in the program in a given month. Funding is inadequate to meet the demand for this program, forcing program administrators to rotate clients through the program every two months. The program director reports that the case load has doubled over the past three years, perhaps because of the large number of households that have been dropped from cash assistance rolls. (Manley, 1-08-2002).

D. Child Welfare.

Child Protection. The Tribe's Social Service Department operates a Child Protection program which is funded under a 638 contract with the BIA. The Child Protection program is charged with the responsibility of investigating all reports of child abuse or neglect. If abuse or neglect is found, a Child Protection Worker ("CPW") will remove the child from the home and place the child in protective custody. If the child is aged 12 or under, he or she will be placed in protective custody at the Rosebud Emergency Shelter. The Rosebud Shelter only has room for 6 children, so if the shelter is full or the child is over 12, the child will be temporarily placed in foster care. Once the child is in protective custody, the CPW will then prepare a "child in need of care" petition for submission to the Tribal Court. Such petitions must be filed within 72 hours of the child's removal from the home. (Shoulderblade, 1-23-2002).

Child Protection has funding for only one CPW. The CPW is responsible for an extremely heavy case load. During FY 2000, there were a total of 465 child abuse and neglect cases referred to Social Services. More specific information is available for the second quarter of 2001. During that quarter there were 136 child abuse and neglect referrals. Of these, 22 involved allegations of physical abuse and 15 involved allegations of sexual abuse. Twenty-two of these reports were found to be substantiated. "Child in need of care" petitions were filed in eight cases. When the CPW is occupied with another case or is unavailable, child protective services are provided by a Child Welfare case worker. This added emergency responsibility means that Child Welfare workers are less available to perform more routine monitoring and counseling functions. (Matas, 2001:62; NCT Social Services Department, 2001c; Shoulderblade, 1-23-2002).

Child Welfare. The Tribe's Child Welfare program is responsible for on-going case management once a child is removed from the home by a Child Protection Worker and becomes a ward of the Court. The Child Welfare program will find a placement for the child, either in a foster home or in a residential facility, and will provide monitoring of the child while in foster care. The Child Welfare program also provides monitoring and counseling for children who have been returned to the home under a service treatment agreement. The program is responsible for reimbursing foster parents for their costs. Reimbursement rates range from about $15 to $18 per day. (Shoulderblade, 1-23-2002).

There is no foster care on the Reservation for children with special needs, because no foster parents on the Reservation are currently trained to handle special needs children. In addition, there are no on-Reservation residential care facilities. The nearest facility is in Billings. Children without special needs are typically placed in foster care with relatives. However, the Tribe can pay foster parents who are relatives for no more than 30 days. Relative who wish to continue receiving foster care payments after this time may receive payments from the Title IV(e) program but only if they are eligible to receive welfare benefits under TANF. These requirements act as a disincentive which works against keeping children in their extended families and are inconsistent with Cheyenne cultural norms. (Shoulderblade, 1-23-2002).

The Tribe's Child Welfare program has funding for only two Child Welfare case workers. The case load is extremely heavy. For example, during the second quarter of 2001, each Child Welfare case worker handled about 25 to 30 different cases each month. One case may involve more than one child if several children are subject to abuse or neglect in a single home. During this period, one Child Welfare case worker managed an average of 25 children in foster homes, seven children in group homes, and 22 children placed with relatives. Thirteen of her cases involved review hearings in Tribal Court. The Child Welfare case worker also investigated 24 referrals and handled six "child in need of care" petitions in Tribal Court. She also made 32 foster home visits and 11 parent home visits. Finally, she made 104 telephone contacts with foster parents and 109 parent telephone contacts. (NCT Social Services Department, 2001c).

As a result of this heavy work load, the Child Welfare program operates continuously on a crisis basis. Although Child Welfare case workers are supposed to make monthly visits to their wards, this is rarely possible given the heavy case load. The Social Services Department estimates that at least two additional Child Welfare case workers are needed to meet the existing demand for services. (Shoulderblade, 1-23-2002).

Indian Child Welfare Act/Home Base. Since 1991, the Tribe has operated an Indian Child Welfare Act ("ICWA") program under a 638 contract with the BIA. The focus of the ICWA program is two-fold: strengthening and preserving Indian families on the Reservation; and intervening to assert the Tribe's interests in State court proceedings involving children who are Tribal members. (NCT Social Services Department, 2001a)

With respect to on-Reservation families and children, the ICWA program takes a "home-based" approach which provides counseling and other services to families who are at risk of break down in order to assist family members learn how to function safely and productively within the family unit. The ICWA program receives its case load from the CPW who is responsible for investigating all referrals for child abuse and neglect on the Reservation. If the CPW determines that Court intervention is unnecessary but the family is at risk for abuse and neglect, a referral is made to the ICWA program for monitoring and counseling services. If the family agrees, a Home Counselor from the ICWA program will conduct an individual needs assessment and develop a treatment plan which is signed by all parties. The treatment plan often includes an agreement to seek drug and alcohol treatment though the Tribe's recovery program. Family counseling, individual counseling, and parenting classes may also be included. (NCT Social Services Department, 2001a; Shoulderblade, 1-23-2002).

The Home Counselor is responsible for making regular visits to the home to provide support, follow up, and monitoring. As resources allow, the Counselor also may provide counseling to family members and other services including transportation, house cleaning, and respite care. The Counselor may also work with other Tribal agencies to help families address problems relating to housing, employment, education, health, chemical dependency, and domestic violence. The program used to have some money to help

families pay for day care but this funding has now been eliminated. (NCT Social Services Department, 2001a; Shoulderblade, 1-23-2002).

The second major focus of the ICWA program is the intake and processing of all ICWA notifications concerning Northern Cheyenne children involved in State court systems. A Home Counselor takes the lead role in processing these notifications and assessing whether the affected child qualifies for the Tribe's services. The final decision to take action on a State referral is made by the Director of the Tribe's Social Services Department with the advice of a three-member committee appointed by the Tribal Council. Once a decision is made to take action, the Tribe will attempt to intervene in the State court action and seek to transfer jurisdiction over the child to Tribal court. If jurisdiction is transferred, the case will be assigned to a Child Welfare case worker who is responsible for developing a plan for care and placement of the child. The first preference for placement is with the child's parents or extended family members. (NCT Social Services Department, 2001a; Shoulderblade, 1-23-2002).

The ICWA program has extremely limited resources available to fulfill the above objectives. The total budget for the program in FY 2002 is about $65,000. With its current funding, it can employ only two Home Counselors, who in FY 2001 each received a salary of $7.81 per hour or $16,243 per year. Each of these underpaid Home Counselors has a heavy case load. During the fourth quarter of FY 2001, for example, each ICWA Home Counselor typically had about six on-going cases at any one time. In addition, the Counselors processed seven new cases and made a total of 52 home visits, 34 office visits and 28 foster home contacts. Finally, the Home Counselors conducted intake and processing of 183 State court notifications. (NCT Social Services Department, 2000b; NCT 2001a).

In addition to not having enough Home Counselors, the ICWA program lacks sufficient resources to intervene to protect the Tribe's interests in State court proceedings involving the children of Tribal members. The IWCA program could afford to spend only $10,000 for attorneys' fees in 2001 despite the fact that the Tribe must be represented by an attorney in State court proceedings. The lack of money for attorneys' fees dramatically limits the number of State court cases in which the Tribe can afford to intervene. Even in cases where the Tribe does intervene, the Tribe usually has sufficient resources only to file papers with the court and cannot send an attorney to the court hearing to represent the Tribe. In cases where the Tribe does not intervene, the child is usually put in a non-native foster home. (Shoulderblade, 1-23-2002).

Title IV(e) Foster Care The Northern Cheyenne Tribe is one of ten Tribes in the nation that participate in the Foster Care program funded under Title IV(e) of the Social Security Act. Title IV(e) was enacted to make children qualifying for public assistance also eligible for foster care services. The Title IV(e) program is funded by the United States Department of Health & Human Services through the State of Montana. (Parker, 1-08-2002; Matas, 2001:63).

The Title IV(e) program provides foster care services to Native American children who are on, or eligible for, public assistance. Approximately 40 percent of all Reservation children in foster care are Title IV(e) eligible. The Title IV(e) program arranges foster care placements, provides monitoring of foster care arrangements, and provides residential or therapeutic care to special needs children. The program also provides support payments to foster parents ranging from $450 per month for children 12 and under, $600 per month for children 13 and older, and up to $700 per month for special needs children. (Parker, 1-08-2002).

Funding for this program in FY 2002 is projected to be approximately $195,000. Program staffing includes a full-time director, full-time office manager, and two full-time social workers. Funding is determined on the basis of anticipated need. Starting in July 2001, the Tribe began negotiations with the State and federal governments on a six-year funding agreement for the Title IV(e) program. No agreement has yet been reached. If the number of Title IV(e)-eligible children increases beyond the levels currently anticipated, the long-term funding levels established in these negotiations will be inadequate. (Parker, 1-08-2002).

Case loads are subject to large fluctuations. The current case load for the Title IV(e) program is 60 children in placement, although case loads have at times been as high as 100. For most children, length of placement ranges from three to four years. The major reasons for referral are neglect and sexual abuse, which are often alcohol or drug related. Approximately 20 children are placed with foster families on the Reservation. However, many children have special needs and require more than foster placement. Approximately, 20 to 30 children are in therapeutic care, many of whom are in the InCare facility in Billings, where approximately 75 percent of the children are Northern Cheyenne. Another ten children are in group homes. About five or six children require psychiatric care and are in off-Reservation residential facilities in Wyoming and Montana. (Parker, 1-08-2002).

The program is struggling with two problems: there are not enough families on the Reservation that qualify as foster parents, and there are not enough foster parents trained to work with children who have special needs. (Matas, 2001:63; Parker, 1-08-2002).

Foster Care Licensing The Tribe's Social Services Department operates a program for recruiting and licensing Tribal members as foster care providers. Funding is provided by the Federal Department of Health & Human Services at a level of $62,000 for FY 2002. The licensing program includes character and criminal background checks, a tuberculosis test, and certification that the foster parent has completed a limited amount of foster parent training (approximately 10 to 12 hours). The program focuses on getting the relatives of children in need of foster homes licensed to provide foster case as quickly as possible. However, it has very limited resources to pay for this training, which is usually conducted at Chief Dull Knife College or St. Labre. The program is also responsible for monitoring subsidized adoptions and foster care placements and ensuring that foster parents receive their monthly payments. (Shoulderblade, 1-23-2002).

The Department has the resources to employ only one foster care licensing worker. In 2001, the foster licensing worker was responsible for overseeing 60 families on the Reservation and ten families off the Reservation that were licensed to provide foster care. More specifically, in the second quarter of FY 2001, the foster care worker licensed ten new foster homes and re-licensed an additional eight homes. The worker also conducted 25 home visits to existing foster homes and conducted six additional home studies for the Tribal Court. (Matas, 2001:63; NCT Social Services Department, 2001c; Shoulderblade, 1-23-2002)

E. Elder Assistance.

Shoulderblade Center. The Tribe provides congregate housing services to elders at the Shoulderblade Center in Lame Deer using funds awarded by the United States Housing and Urban Development ("HUD"). For FY 2002, HUD awarded the Tribe $104,000 for this program. HUD requires the Tribe provide an additional $10,000 in matching funds in order to receive this money. The Shoulderblade Center itself is maintained by the Tribal Housing Authority. The Center has 35 apartments, of which 33 are currently filled. The apartments are available to both seniors and to younger Native Americans with disabilities. Currently, four of the apartments are occupied by non-seniors. The Shoulderblade Center is not a nursing home. However, the Center does provide transportation, personal care, housekeeping and meal service to its residents. The director of the program notes that elders are reluctant to leave their homes to live at the Center, so an increasing number of apartments are being given to young people who have been injured in traffic accidents. However, the Reservation's elderly population is projected to double over the next five years so demands on the Shoulderblade Center are likely to increase. (Tallbull, 1-08-2002).

Food Program. The Tribe's Elder Program provides free meals to elders using grant moneys awarded by the United States Administration On Aging ("AOA") under Title VI of the Older Americans Act. The Tribe must provide matching funds in order to receive the federal funding. In 2001, the Tribal match was approximately $39,000. Funding is provided monthly to reimburse the Tribe for the number of meals actually served. (Tallbull, 1-08-2002).

There are about 260 elders who are eligible for free meals under the elder food program. Disabled persons, the spouses of elders, and personal care givers are also eligible to receive meals. One meal per day is provided at two meal centers – the Shoulderblade Center in Lame Deer and the St. Labre School in Ashland. About 79 meals are served daily at the Shoulderblade Center and another 27 are served in Ashland. Residents of the Shoulderblade Center receive two additional meals per day. The Tribe also operates a mobile service for elders who cannot travel to the meal center. The mobile service serves 81 elders in Busby, 48 in Lame Deer, and 32 in Birney. Since mobile food service has been made available in Birney and Busby, participation has increased from 8 to 32 elders in Birney and from 13 to 81 in Busby. Funding is not available to operate the

mobile meal program on weekends. Two meals are served at the Shoulderblade Center on weekends for a charge of $9.50. (Tallbull, 1-08-2002).

VIII. Employment and Job Training.

Workforce Investment Act. The Tribe administers an adult job training and work experience programs funded by the United States Department of Labor under the Workforce Investment Act. The Tribe also administers a youth work experience program.

The adult work experience program is staffed by a quarter-time director, a half-time secretary, and a quarter-time counselor. The program provides work experience opportunities on the Reservation which consist of minimum wage employment with Tribal government programs for a maximum of three months. This includes both placement and funding of the recipient's salary. The program also provides some support services, including work clothing, and gas and mileage for persons enrolled in the program. In addition, the program also pays a stipend of $250.00 per year to Classroom Training (CRT) as well as paying a stipend to persons receiving their GED in the GED Program at Dull Knife college. (Whitewolf, 1-08-2002 and Whitewolf, 2002).

Federal funding for the adult program is $176,000, of which 20 percent is allocated to program administration. Funding levels are set based on the Reservation's low-income Native American population as determined by the United States Census. All on-Reservation Indians meeting Federal income guidelines are eligible to participate in the program. However, funding is inadequate to serve but a fraction of those who apply for assistance. Approximately 15 people are currently placed in Work Experience, another 100 are enrolled in CRT including GED students. The program reports at least 75 applications for work experience that cannot be met. The program cannot meet current needs at current funding levels. Funding is based on Census low-income population statistics, not on actual demand for services. (Whitewolf, 1-08-2002 and Whitewolf, 2002).

Federal funding for youth work experience program is $57,000 per year. It is staffed by a quarter-time director, a half-time secretary and a half-time counselor. Native American youth between 14 and 21 years old are eligible to participate if their parents meet federal income guidelines. There is a preference for Tribal members if demand for services exceeds funding. The program places youth in short-term jobs with Tribal government and funds up to 10 hours per week of their salary at minimum wage. In addition, the program pays a stipend of $250 to youth upon completion of the GED program. There is currently a waiting list for this program. (Whitewolf, 1-08-2002).

Tribal Employment Rights Office ("TERO"). The Tribe was one of the 12 original members of the Council for Tribal Employment Rights which created the Tribal Employment Rights Office (TERO) concept in the 1970s. In 1977, the Tribe received a grant from the federal Equal Employment Opportunity Commission ("EEOC") to establish a TERO program on the Reservation. The program is based on a TERO ordinance which requires Indian preferences in on-Reservation employment, training and contracting in

accordance with Federal law. The TERO ordinance also imposes fees on all Reservation contracts and requires that all non-Indians working on the Reservation obtain work permits from the Tribe. (Braine, 1-09-2002).

The TERO ordinance establishes a TERO office which is responsible for enforcing the Tribe's TERO requirements and EEOC mandates, collecting fees from non-Indian contractors and workers performing services on the Reservation, and issuing fines for violations of TERO and EEOC requirements. The TERO program uses these fees and fines to fund its enforcement activities and to underwrite the services it provides to Tribal members and other Indians which include job training, employment referrals, workforce incentives, and employment counseling. (Braine, 1-09-2002; Matas, 2001:27).

Although the TERO offices continues to receive approximately $25,000 in annual funding from EEOC, the ability to assess fees makes the TERO program financially independent from Tribal government. Contractor fees are imposed on a sliding scale based on the total value of the contract. Contracts of less than $10,000 are assessed a fee of $50, contracts between $10,000 and $150,000 are assessed a fee of 2 percent of the contract value, and contracts of over $150,000 are assessed a fee of 3 percent of the contract value. Work permits are $20 for each non-member and are applied on a per contract basis. (Braine, 1-09-2002).

Several major construction projects on the Reservation have recently allowed the TERO program to greatly expand its budget and the services it can provide to Tribal members and other Native Americans. These projects include the Northern Cheyenne Health Center, the Lame Deer High School, the Chief Littlewolf Capitol Building, the reconstruction of U.S. 212 east of Lame Deer, improvements to the Tongue River Dam and the reconstruction of the Busby school and gymnasium. Over the past five years, annual TERO-generated revenues have averaged $376,455. Staffing levels in the TERO office have grown from two full-time employees in 1985 to six full-time employees today. (Braine, 1-09-2002).

The Tribal TERO office operates a job training and placement program for on-Reservation contractors. The TERO office certifies contractors and ensures that only TERO-certified contractors are allowed to bid on Reservation projects. Once a bid is accepted, the contractor is required to prepare a compliance plan with the assistance of a TERO compliance officer. In addition to specifying the amount of the TERO fee, the plan will also specify the number of Tribal members and other Indians that the contractor must employ on the project. This number is subject to negotiation and the contractor is permitted to retain a core crew of its own employees who are essential to the fulfillment of the contract. In FY 2001, the TERO office negotiated 68 compliance agreements and conducted 143 on-site inspections to monitor compliance with these agreements. (Braine, 1-09-2002).

The TERO office also recruits qualified Tribal members and other Indians to fill the positions provided for in the compliance plan. If there are no qualified Indians on the Reservation, the Northern Cheyenne TERO office will contact TERO offices on other Indian reservations to find qualified Indian applicants. As of FY 2001, the TERO office had 885 job applications on file, of which 682 were Tribal members. However, there is roughly a 300 to 400-person labor pool from which prospective employees are drawn. Skills that are typically requested are carpenters, truck drivers, heavy equipment operators, flaggers, laborers, and clerical help. The labor pool is approximately 80 percent male. Approximately 61 percent of the Northern Cheyenne TERO applicants have a high-school diploma, another 15 percent have a GED degree, and 18 percent have some college education. Fifty-seven percent of the TERO program's job applicants are trade certified. (NCT TERO, 2002).

The TERO office has an toll-free number that prospective applicants can call to find out if any positions are available. Contractors typically conduct job interviews at the TERO office or at other locations on the Reservation. The TERO office made 588 job referrals to contractors in FY 2001 which resulted in 196 hires. (Matas, 2001:27; Braine, 1-09-2002).

The TERO program is also involved in job training efforts. TERO will negotiate with contractors for training positions in TERO compliance plans. The TERO program also provides Tribal members will financial assistance with various forms of job training, including apprenticeships. TERO will also pay the costs of getting Tribal members enrolled in unions licensed in trades. For example, in FY 2001, the TERO office assisted 54 individuals in receiving flagger certification training. Efforts have recently begun to improve coordination between different Tribal programs (including the Workforce Investment Act and adult education programs) that also provide job training to members. (Braine, 1-09-2002).

Child Care. A major problem for Tribal members seeking employment is finding inexpensive, reliable child care. There are currently six day care facilities on the Reservation, four in Lame Deer and one each in Busby and Ashland. All of these facilities operate on a fee for service basis. The Tribe administers a program funded by the United States Department of Health and Human Services which subsidizes child care expenses (both in-home and at child care centers) on the Reservation. The program is administered by a quarter-time director and has a full-time coordinator on staff. All Native Americans needing child care who fall below an income threshold are eligible to receive services under the program. Tribal members are given preference in the event of a shortage in funding. The program provides a child care subsidy of between $1.50 and $2.00 per hour depending on the income of the recipient. (Whitewolf, 1-08-2002).

Current funding for FY 2002 is approximately $197,000, of which 20 percent is allocated to administration. Funding levels are based on the low-income population reported by the United States Census. Approximately 100 clients receive funding for child care under this program. The program director reports that there is an extensive waiting

list for services. Increases in demand for services resulting from off Reservation development will not automatically result in increases in funding because funding levels are based on census low-income population statistics, not on the actual demand for services. The lack of funding for child care may pose a barrier preventing Tribal members from obtaining the employment and other benefits of off-Reservation energy development. (Whitewolf, 1-08-2002).

IX. Recreation.

Outdoor recreation activities available on the Reservation include hunting, fishing, hiking, horseback riding, and plant and berry gathering, (BLM, 1989). Unrestricted hunting is allowed on the Reservation for enrolled Tribal members. Many species are being impacted by the lack of hunting regulations, such as deer, antelope, bobcats, and waterfowl. Currently, no wildlife plans, ordinances or regulations exist; however, the Tribe is working on establishing these policies (Headswift, personal communication, 2002). Wild game can thrive on the Reservation with the proper land and game management policies and become a harvestable natural resource. (Little Coyote, 2001).

Fishing opportunities on the Reservation are limited and generally restricted to stocked ponds and the main fisheries, Rosebud Creek and the Tongue River. Tribal members do not need fishing permits, nor are there regulations as to catch number or size. (BLM, 1989).

The only developed recreational area is Crazy Head Springs. It consists of four spring-fed ponds located on the divide between Lame Deer and Ashland (Little Coyote, 2001). Picnic and camping facilities are available and fish are stocked in the springs. This recreation facility is heavily used, and recent water testing has indicated the presence of fecal coliform bacteria (Little Coyote, 2001).

Other recreation areas with minimal facilities include (BLM, 1989; Killsback, 2001a):

- Lost Leg Lake
- Ice Wells Picnic Area
- Green Leaf, Red Nose, and Parker Ponds
- Morning Star, Garter Peak and Badger Peak Lookouts
- Kenneth Beartusk Memorial PowWow Grounds
- Buffalo Jump
- Indian Chief Two Moons Historical Monument
- Busby Race Track (White River Recreation Site)

The parks on the Reservation include Birney Park, White Moon Park, Tongue River Park, Busby Park, and Lame Deer Parks, which include the West Side Park, East Side Park, and Dull Knife Park and Picnic Area. The Summer Youth Work-Learn Program actively attended to these areas in the summer of 2001 to beautify the facilities of the Reservation (Killsback, 2001a).

There is nevertheless a paucity of developed recreation facilities on the Reservation. There are no baseball fields, swimming pools, tennis courts or golf courses. The Lame Deer High School and the Boys and Girls Club each have an indoor basketball court, but the school gym is open to the public only on Sundays and the gym at the Boys and Girls Club is open for a couple of hours each evening. There are football fields at the schools in both Lame Deer and Busby. The nearest movie theater is in Hardin. (Whiteman, 2-25-2002).

The Reservation has actually suffered a net loss in recreational facilities over the years. The Lame Deer swimming pool closed about 15 years ago due to cracks in the foundation that were not repaired. The largest developed park in Lame Deer, Black Kettle Park, which was the site of two baseball diamonds, outdoor basketball courts and a horseshoe ring, was appropriated as the site for the new IHS Health Center in 1999. Only $90,000 was provided by IHS to mitigate the loss of these recreation facilities while replicating these facilities elsewhere is estimated to cost $391,000. In addition, a public gym was torn down to make way for the new Tribal government center in 1996. (Whiteman, 2-25-2002).

The lack of developed recreation facilities on the Reservation contrasts with the abundance of these facilities in the town of Colstrip. Colstrip has its own golf course and a public recreation center complete with a swimming pool, basketball courts, racket ball courts, and a fitness center. There are also outdoor tennis courts and an artificial lake for fishing and swimming. (Whiteman, 2-25-2002).

X. Transportation.

A. Availability.

Although the Reservation road network has been improved over the years, the Reservation community still suffers from a severe transportation deficit. Access to private automobile transportation is limited due to high rates of poverty. For example, only three out of ten recipients of General Assistance report having personal transportation. (Matas, 2001:43)

Public transportation on the Reservation is nonexistent. (Matas, 2001:43; Spang, 1-09-2002). The Reservation also has no private bus service. The nearest bus depots are in Crow Agency (41 miles from Lame Deer) and Forsythe (58 miles from Lame Deer). (Matas, 2001: 43). There is rail or air service on the Reservation. There is also no formal taxi service. (Spang, 1-0-9-2002).

The Tribe's Board of Health does offer special transportation for persons needing to visit off-Reservation health care facilities. In addition, an agreement between the Tribe and Pacific Power and Light ("PPL") (formerly Montana Power) requires PPL to provide transportation services for Indian employees residing on the Reservation to job sites in Colstrip. These transportation services are privately contracted by Z Bar Enterprises, which is owned by a Tribal member. Similar provisions in the Tribe's agreement with the Western Energy Company are apparently not being implemented. (Braine, 1-09-2002).

Finally, as discussed in section VI, above, the Reservation Head Start program, Lame Deer School District, the Busby school, and the St. Labre Mission provide free transportation to those students who live on the Reservation. Free transportation is no longer provided for Reservation students who choose to attend the off-Reservation Colstrip public schools. (Braine, 1-09-2002; Nygaard, 1-24-2002).

B. Infrastructure.

The Reservation is serviced by two major State primary highways that are constructed and maintained by the Montana Department of Transportation and one secondary highway that is the responsibility of Big Horn County. Other secondary highways on the Reservation are maintained by the BIA using moneys from federal Highway Trust Fund.

U.S. Highway 212. U.S. Highway 212 is a major east-west thoroughfare which runs from Rapid City, South Dakota, west to the intersection with Interstate 90 at Crow Agency, 22 miles west of the Northern Cheyenne Reservation's western boundary. The highway connects the Reservation communities of Busby, Lame Deer and Ashland. It is the major local road, as well an important through route. (Feeney, 1986:6:46).

U.S. 212 was originally constructed between 1954 and 1957. The portion of U.S. 212 between Busby and Lame Deer was improved in the mid 1970s. The portion between Lame Deer and Ashland was not improved at this time and by the mid-1980s was rated by the Montana Department of Highways as one of the worst highways in Montana. (Feeney, 1986:6-48,50). Over the past several years, however, the Lame Deer to Ashland highway has undergone total reconstruction, including reconstruction of the roadbed, widening and realignment, installation of passing lanes, elimination of hairpin curves, resurfacing, and the installation of new culverts and guardrails. (Braine, 1-09-2002).

Because U.S. 212 is a through road between Rapid City and Interstate 90, it receives heavy truck traffic. Tribal officials have pointed out that truckers may have an incentive to use U.S. 212, instead of Interstate 90, due to the relative lack of traffic enforcement along the route. This problem is exacerbated on the Northern Cheyenne Reservation where BIA law enforcement officers lack jurisdiction to enforce State speed limits and other traffic laws. Only one State highway patrol officer is stationed in Colstrip. The next nearest State highway patrol officer is in Miles City. (Melville, 1-24-2002).

Perhaps as a consequence of the lack of enforcement, BIA law enforcement officials report that long-haul truckers often violate speed limits when crossing the Reservation. This is a special problem in the vicinity of Busby and Lame Deer where the posted speed limit is 45 mph rather than the normal truck speed limit of 65 mph. The BIA will often stop truckers and write warnings for speeding, even through they cannot write traffic citations, simply to slow truckers down and provide a disincentive for those who hope to save time by using U.S. 212. (Melville, 1-24-2002).

State Highway 39. Montana Highway 39 is a primary north-south highway that runs south from Interstate 94 through Colstrip, to its junction with U.S. 212 in Lame Deer. The highway was built in the early 1960s. All of Highway 39 between Lame Deer and Colstrip was improved during the coal boom of the late 1970s and early 1980s, except for the four miles within the Reservation, which were reconstructed in 1993. (Feeney, 1986: 6-48; Spang, 1-09-2002).

County Highway 314. Highway 314, also known as BIA Highway 8, is a paved secondary road which is maintained by Big Horn County and runs south from Highway 212, through the towns of Kirby and Decker to Interstate 90 north of Sheridan, Wyoming. The portion of Highway 314 from Highway 212 south to the Reservation line was reconstructed in 2001. (Spang, 1-09-2002).

BIA Highway 4. BIA Highway 4 is a paved secondary road which is managed by the BIA and runs south from Lame Deer to the Reservation village of Birney. The road is narrow, winding, and often icy in winter. However, it is the most direct route from Billings and Miles City to much of the upper Tongue River Valley. The BIA plans a major reconstruction of this road starting in 2002. (Spang, 1-09-2002). The funding and completion date for this project is uncertain.

BIA Highway 11. BIA Highway 11 is a paved secondary road which runs along the west bank of Tongue River between Birney and Ashland then north to the Reservation line and on to Miles City. The off-Reservation road along the east bank of the Tongue River is unpaved so north-south traffic between Ashland, Decker and Sheridan primarily utilizes Highway 11 through the Reservation. Highway 11 north of Ashland was reconstructed and paved by the BIA. The BIA has been working on reconstruction of the southern portion of Highway 11 for the last seven years but it is still not finished. (Spang, 1-09-2002).

Town of Lame Deer. Streets in the Town of Lame Deer are owned and maintained by Rosebud County. Under a cooperative agreement, BIA plows Lame Deer's streets in exchange for the County's plowing of the on-Reservation portion of BIA Highway 11 north of Ashland. Use of sand on Lame Deer streets and the lack of paving has resulted in a serious problem with airborne dust during the winter. There has been so much dust that Lame Deer has been designated a non-attainment area for PM10. See Chapter 6 Part IV.C. The air quality problem has been partially addressed through the use of magnesium chloride instead of sand. In addition, The Tribe recently obtained an award of $600,000 from the Montana Air Congestion Initiative which will result in the paving of Morning Star

Drive, the last major gravel street in Lame Deer. Other township streets have recently received an overlay to produce rejuvenated asphalt. This work was done by Rosebud County. (Spang, 1-09-2002).

C. Transportation Planning.

The Tribe's TERO office has the responsibility to undertake transportation planning for the Reservation under two 638 contracts with the BIA. The first contract provides funding for the development of a transportation plan to be adopted annually by the Tribal Council which is used to set transportation priorities for the BIA's Roads Department and upgrade the Reservation's road inventory. The second contract is a one-time set aside for the development of a ten-year transportation plan for the Reservation. Future transportation funding from the federal Highway Trust Fund will be based on the needs established in this ten-year plan. In addition to funding road construction, moneys from the Highway Trust Fund may be available for other transportation projects such as sidewalks, bike paths, and public transportation. (Spang, 1-09-2002).

D. Traffic Law Enforcement.

The lack of enforcement of traffic laws is a serious public safety problem on the Reservation. There is still no Tribal traffic code and very few traffic regulations on the Reservation. For example, Tribal members may drive on the Reservation without a driver's license or insurance. As a result, children as young as 12 years old have been observed operating motor vehicles on the Reservation. There are still few speeding regulations. The fines for DWI are $500 for the first offense, $1,000 for the second offense and $2,500 for the third offense. (Melville, 1-24-2002).

Tribal traffic regulations that exist can generally only be applied to Indians. Enforcement of traffic laws against non-Indians is extremely problematic. The BIA, which has primary law enforcement authority on the Reservation, has no authority to enforce State traffic laws and the State highway patrol does not routinely patrol Reservation highways. Non-Indian truckers and others already exploit this jurisdictional gap and drive at excessive speed on U.S. 212. The lack of traffic law enforcement may contribute to the extremely high accident rate on the Reservation. This problem may increase with off-Reservation development if workers and contractors travel across the Reservation to and from job sites in the Tongue River valley. (Melville, 1-24-2002; Braine, 1-09-2002).

E. Transportation Safety.

Tables 1 and 2 in Appendix C show annual average traffic volumes, miles driven, and accident statistics for U.S. 212 and State Highway 39, the major federal and state routes through the Reservation, for the period 1990 through 2001.[1] In the tables, the data

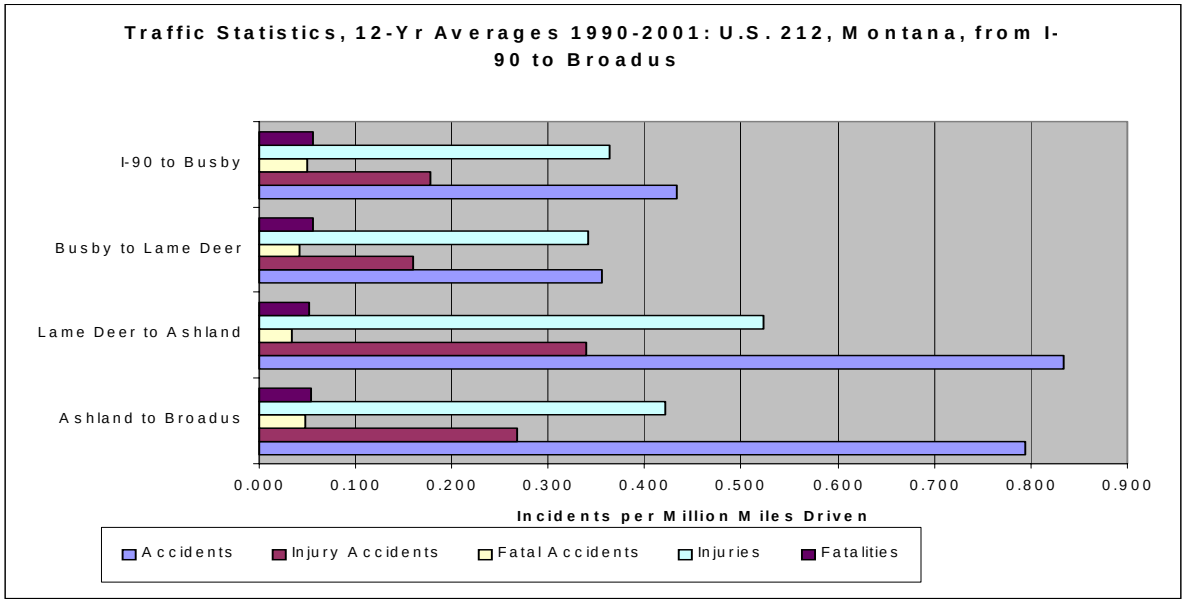
[1] The data from which these tables are derived were made available through Pierre Jomini, Safety Management Engineer with the Montana Department of Transportation. Mr. Jomini cautioned that "…these crash data are from the Montana Highway Patrol data base and not all crashes on the Northern Cheyenne

are aggregated in two five-year intervals (1990-1994 and 1995-1999) and a final two-year 2000-2001 interval. Table 1 presents the statistics for U.S. 212 from Interstate 90 in the west to Broadus, Montana in the east. Table 2 presents the same information for Montana State Highway 39, from its Lame Deer intersection with U.S. 212 north through Colstrip, and on to its junction with Interstate 94. (See Appendix C)

The different road segments, however, are of different lengths, and have different volumes of traffic. For the information to be comparable, these variables need to be held constant. Tables 1a and 1b present road accident figures for the four road segments of Highway 212 by million miles driven on each segment (Table 1a), and by the average ten-mile section of each road segment (Table 1b). Tables 2a and 2b present the same information for State Highway 39. (See Appendix C)

This data compiled in these tables show that the road segments from Lame Deer east to Broadus have relatively high accident rates for miles driven, as compared to the road segments from I-90 to Lame Deer. Figure 5-1. Further, the road segments from Lame Deer to Broadus show roughly equal accident rates per million road miles. In other words, a motorist faces roughly the same risk of an accident driving from Lame Deer to Ashland, as he or she does driving from Ashland to Broadus. But looked at in this way, the statistics tell only part of the story.

Figure 5-1: Accident Statistics per Each Million Miles Driven Annually, 1990 - 2001. U.S. 212, Montana, From the I-90 Junction to Broadus.



The Lame Deer to Ashland segment of U.S. 212, however, has nearly twice the traffic volume of the Ashland – Broadus segment (AADT of 1,500 for Lame Deer – Ashland as compared with 800 for Ashland – Broadus), while being less than half as long (19 miles vs. 41.5 miles). Therefore, a more indicative figure from the standpoint of traffic safety is

Indian Nation are reported to the Highway Patrol." (Jomini, 2002).

the accident rate of a road segment for a given number of miles. This figure can then be compared for the different road segments. In Figure 5-2, below, each road segment has been divided into ten-mile intervals. The number of accidents was then multiplied by the ratio derived from dividing a ten-mile section by the total length of the road. The results of this approach are shown in Table 1b in Appendix C and graphically in Figure 5-2.

Figure 5-2: Accident Statistics per Each 10-Mile Average Road Segment Driven Annually, Twelve Year Averages 1990 - 2001. U.S. 212, Montana, From the I-90 Junction to Broadus.

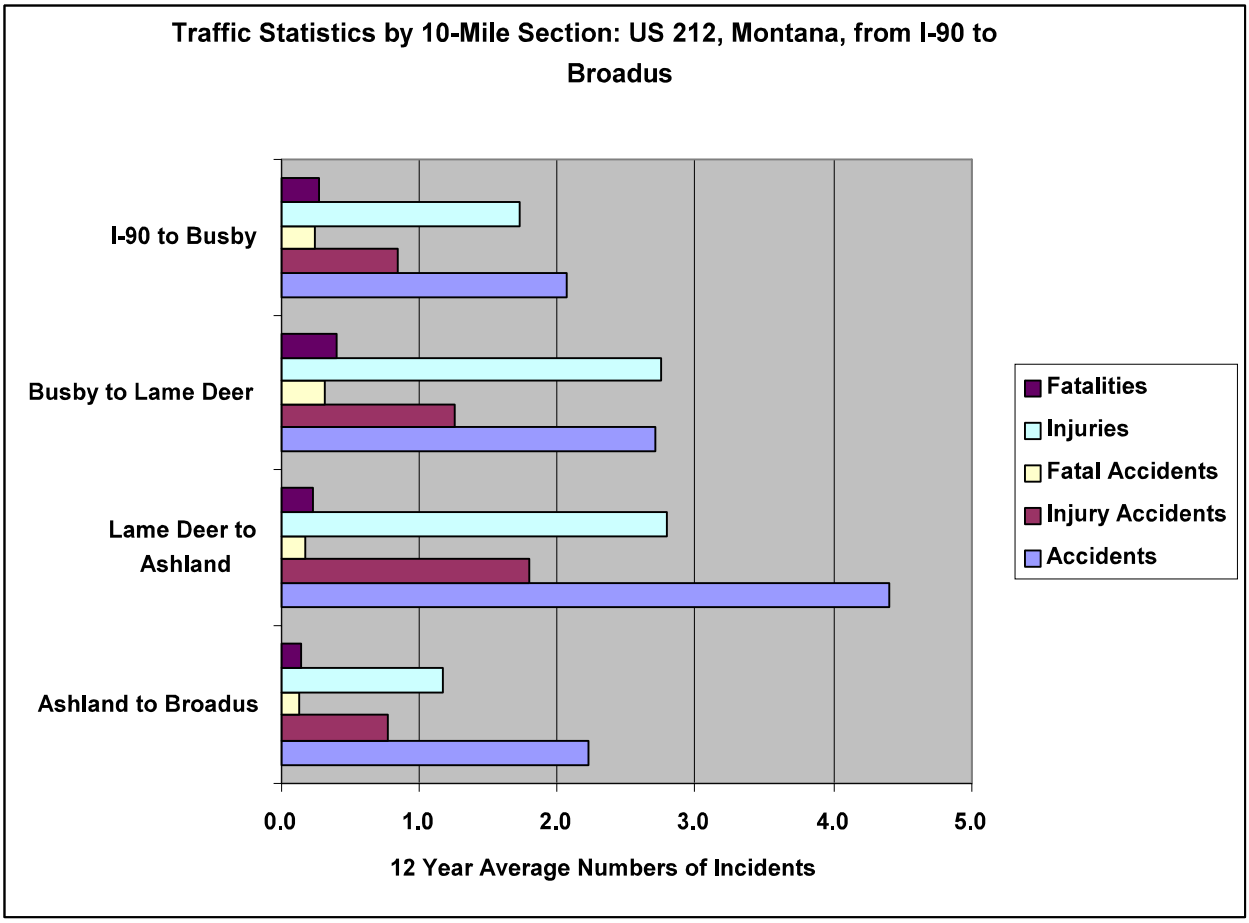


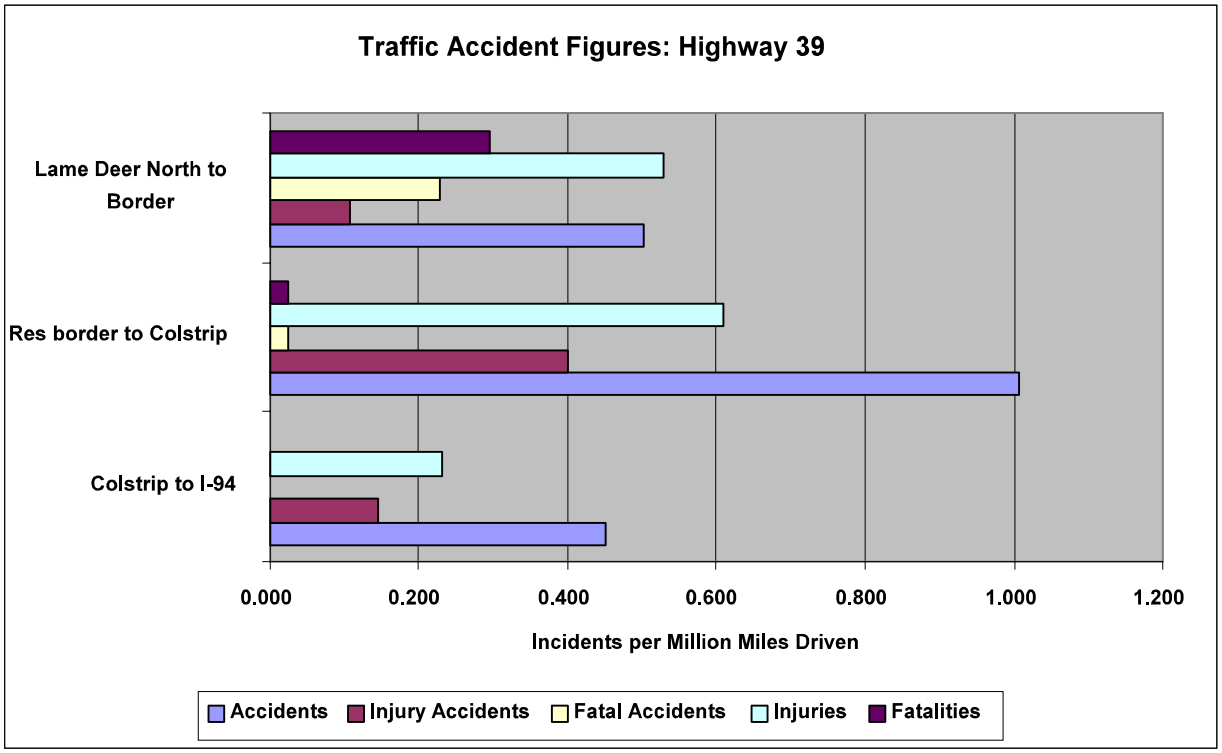
Figure 5-2 above shows clearly that the portions of U.S. 212 on the Northern Cheyenne Reservation are more dangerous mile-by-mile than off-Reservation sections. The Busby to Lame Deer section is highest in fatalities for each average 10-mile section, while the Lame Deer to Ashland stretch is highest in total accidents by 10-mile section.

Tables 2a and 2b in Appendix C and Figure 5-3 and 5-4 below present the same type of data for State Highway 39. This road originates in Lame Deer at the U.S. 212 intersection, proceeds north to the northern border of the Reservation, and then to Colstrip.

From Colstrip, Highway 39 proceeds on to its northern terminus at the junction with Interstate 94.

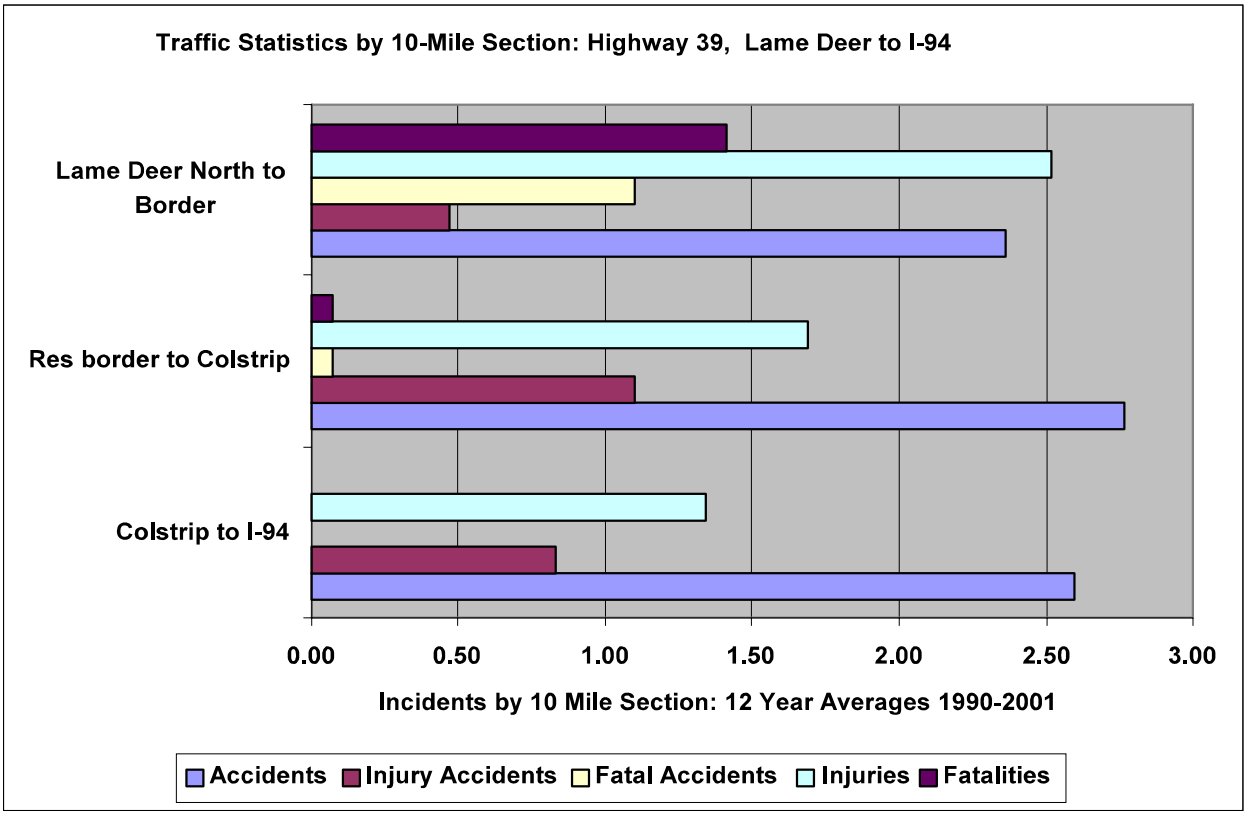
Figure 5-3 confirms that there is a relatively high number of fatalities and fatal accidents in the short stretch from Lame north to the Reservation border compared to off-Reservation segments of the same highway. This short stretch of road, only about 4.25 miles long, runs through a relatively densely populated area of the Reservation. Also notable is the high accident rate in the stretch from the border to Colstrip. Just north of the Reservation border, on Highway 39, is the Jimtown Bar, an establishment popular with residents of Colstrip as well as of the Northern Cheyenne Reservation.

Figure 5-3: Accident Statistics per Each Million Miles Driven Annually, 1990 - 2001. Montana Highway 39, From Lame Deer to the I-94 Junction.



The relatively high rates of fatal accidents on the two segments of Highway 39 from Lame Deer to Colstrip show up even more clearly by looking at accident figures per 10-mile section of road. Figure 5-4 below. On a per mile basis, the relatively higher accident rate from the border to Colstrip becomes less pronounced, while the number of fatalities in the short stretch of road from Lame Deer to the Reservation border becomes more striking.

Figure 5-4: Accident Statistics per Each 10-Mile Average Road Segment Driven Annually, Twelve Year Averages 1900 - 2001. Highway 39, From Lame Deer to the I-94 Junction.



XI. Findings and Conclusions.

In general, public services and facilities on the Reservation are inadequate to meet the Reservation's overwhelming needs which result from decades of severe poverty, unemployment and social disintegration. However, the degree of inadequacy varies from area to area and program to program. In this section, we assess the adequacy of public services and facilities in each subject area. We also identify areas which may be vulnerable to social and economic impacts which may result from off-Reservation energy development.

A. Assessment of Adequacy of Reservation Services and Facilities.

It is our view that none of the 10 categories of Reservation services analyzed in this report is adequate to fully meet the need for services on the Reservation. The most severe deficiencies in service are in the areas of housing, fire protection and employment. The level of service in the area of utilities, law enforcement, social services and transportation is rated as deficient. There are also deficiencies in health, education and recreation services on the Reservation although deficiencies are less pervasive than in other areas. These deficiencies are summarized below and in Table 5-2.

Housing. The Reservation is experiencing a housing crisis. There are approximately 1,200 housing units on the Reservation. Approximately 700 of these units are considered to be in substandard condition. As many as 864 families need new housing. The lack of housing leads to serious overcrowding and forces Tribal members to live off the Reservation. Public housing services are woefully inadequate to address this crisis. With current resources, the Tribe's housing authority is able to acquire or construct only a handful of new houses each year, substantially less than in the heyday of Federal housing programs in the 1970s. About two-thirds of the existing housing stock on the Reservation is in substandard condition. Money for renovation of existing houses is inadequate to keep up with the deterioration of the housing stock, a problem which is exacerbated by overcrowding. Many septic systems for houses built in the 1970s are now starting to fail and no funds are available to correct these deficiencies.

Utilities. Water service is adequate in Lame Deer and Busby but water shortages occur in the outlying districts of Birney, Ashland and Muddy Cluster, requiring mandatory water rationing. Water shortages are the result of undersized reverse-osmosis water treatment systems. However, the water in Birney and Muddy Cluster is undrinkable without these treatment systems. There are serious deficiencies in the Lame Deer sewage treatment plant which discharges into Lame Deer Creek in violation of the federal Clean Water Act. Full funding for remedial work has not been secured. Waste water in the other four districts is allowed to leach into the soil without treatment. In Ashland, this occurs in close proximity to the Tongue River. The Reservation's system of solid waste transfer stations is underfunded and has been allowed to deteriorate to the point where the main collection points are considered open dumps. Illegal burning and dumping of garbage is widespread.

Law Enforcement. The Reservation suffers from an extremely high crime rate which is a symptom of severe poverty and social disfunction. Over 4,000 criminal cases were logged in Tribal Court last year on a Reservation with a census population of just over 4,400 people. Although improvements have recently been made, the police force is still underfunded and understaffed in relation to the scope of the Reservation's serious crime problem. There are times when only one officer is on duty for the entire Reservation. Police coverage in the outlying districts is poor. The Reservation's adult detention facility, although clean and well run, is often severely overcrowded. There is no detention facility for juvenile offenders although a new facility is scheduled for completion in the summer of 2003. The Tribal Court has a heavy criminal case load and operates out of substandard facilities.

Fire Department. The Reservation's volunteer fire department is essentially unfunded. The only available source of funding is a BIA grant targeting fire prevention and education efforts. Little funding is available for training and equipment, and unlike most other volunteer departments, firefighters are not paid for time spent fighting fires. Buildings continue to be lost because not enough firefighters can be kept on call. Fire equipment is old and outdated with most of the Department's fire engines dating from the 1960s and 1970s. At least half of the fire hydrants in Lame Deer are not functional and most of the

rest have inadequate water pressure. The Tribe also has no spill contingency plan and its emergency response program is unfunded. The Insurance Service Office has given the Tribe's Fire Department the lowest ranking possible and fire insurance rates on the Reservation are among the highest in Montana.

Health. As discussed elsewhere in this report, the Reservation community suffers from shockingly high rates of infant mortality, chemical dependency, and diseases such as diabetes. Tribal members are killed and injured by violence and accidents at rates far above statewide norms. The health care system on the Reservation has been greatly improved with the inauguration of the new Health Center in 1999 and the Tribe has many innovative programs designed to address the unique health care needs of the Reservation. However, the health care system is still inadequate in relation to the Reservation's special needs. The Reservation lacks a hospital, there is no dialysis center despite the prevalence of diabetes, and many forms of needed specialty care, such as cardiology, are unavailable. The Reservation lacks a fully certified emergency room because x-ray and laboratory services are not available after hours. The IHS contract care program is underfunded requiring difficult decisions involving the denial of medical treatment to persons in need. There is a low degree of personal mobility on the Reservation and insufficient resources are available to pay the cost of transporting patients to receive health care services. There is no nursing home on the Reservation which means that some elders must spend the last years of their lives away from the Tribal community.

Education. The level of educational services, while perhaps adequate for a more prosperous community without the Reservation's severe social problems, is still not adequate to address the special needs of the Reservation. A new state high school opened in Lame Deer in 1997. The Tribal school in Busby is benefitting from substantial renovations although part of the school burned down in 1998. In addition to these on-Reservation public elementary and secondary schools, parents have the option of sending their children to a well-funded private school in Ashland run by the St. Labre Mission and to the Colstrip public schools which have a tax base which includes four large coal-fired power plants. Free transportation is available to the St. Labre school but is no longer available to Colstrip. The Reservation also has a popular and well-attended Head Start program and its own community college which aggressively seeks funding from various public and private funding agencies. Despite these pluses, Reservation schools perform at the bottom of public schools in Montana and dropout rates remain very high. The number of Northern Cheyenne teachers in the public schools is low and Northern Cheyenne cultural and language programs are underfunded.

Social Services. The Reservation suffers from crushing poverty and very high rates of social ills such as domestic violence and child abuse. Public assistance programs do little to address these fundamental problems. Welfare benefits are meager, and new eligibility requirements imposed by "welfare reform" legislation prevent many needy families from receiving even the inadequate benefits which they were formerly entitled to receive. Needy families are increasingly turning to Reservation commodity and food voucher programs as resources of last resort. Some Reservation households lack heat during the

cold Montana winter as applications for low income energy assistance exceed available resources. Child protection and welfare programs are poorly funded and staffed in relation to high rates of abuse and neglect. Social worker case loads do not allow adequate monitoring and supervision of children in need of care. Children are lost to the Tribe because funding for Indian Child Welfare Act interventions is inadequate and because the number of licensed foster parents on the Reservation cannot keep up with the number of children in need of care. Foster children with special needs cannot obtain any care in foster homes on the Reservation and often must be institutionalized in off-Reservation facilities.

Employment. Unemployment is a severe, chronic problem on the Reservation due to the lack of jobs on the Reservation and barriers to employment in off-Reservation energy projects. There are limited resources available to assist Tribal members in obtaining the training and experience necessary to obtain employment in off-Reservation development projects. Lack of transportation and child care are also barriers to employment. No programs are available to assist Tribal members with their transportation needs and there is a long waiting list for the Tribe's underfunded child care subsidy program.

Recreation. The Reservation has abundant resources available for outdoor recreation and culturally important activities such as hunting, fishing and gathering medicinal plants. However, the Reservation's wildlife resources are not intensively managed or monitored and are in danger of over-exploitation. Cultural events such as Pow-Wows are well attended and the Tribe devotes much of its very limited discretionary resources to supporting these activities. However, the Reservation lacks many developed recreational facilities, such as parks, swimming pools, golf courses and tennis courts.

Transportation. The Reservation's road network has benefitted from substantial improvements since the 1980s. Nevertheless, accident rates are still unacceptably high. Moreover, many people on the Reservation lack the transportation resources to benefit from these infrastructure improvements. There is no public transportation on the Reservation, and the Reservation is not served by any commercial taxi, bus, rail or air service. Many households are too poor to be able to obtain and maintain a reliable automobile. Traffic law enforcement is virtually non-existent on the Reservation.

Table 5-2 – Assessment of Adequacy of Reservation Programs, Services and Facilities

PROGRAM AREA	RATING	RATIONALE
HOUSING	Severely Deficient	• Severe housing shortage – 864 families on or need Reservation need homes • Most housing on Reservation is substandard • Funding for new housing and renovation of existing housing grossly inadequate to meet needs
UTILITIES	Deficient	• Water service is subject to interruption • Sewer system in Lame Deer in violation of Clean Water Act • Open dumps at solid waste transfer stations
LAW ENFORCEMENT	Deficient	• Very high crime rates – over 4,000 annual criminal arraignments in Tribal Court • Police department is greatly understaffed – inadequate coverage in outlying districts • Adult detention facility severely overcrowded – no juvenile detention facility • Tribal Court has only two trial judges to handle extremely high criminal case load • CIRCLE program improving situation but funding uncertain after FY 2003
FIRE PROTECTION	Severely Deficient	• Volunteer fire department is effectively unfunded – no money to keep firefighters on-call • Inadequate money for firefighter training • Most equipment is old and outdated • Lack of coverage in outlying districts • Most fire hydrants on Reservation are non-functional or have inadequate water pressure • Tribe has no contingency plan for hazardous material spills

PROGRAM AREA	RATING	RATIONALE
HEALTH	Partly Deficient	• Reservation population is generally unhealthy – high rates of obesity and diabetes, chemical dependency, accidents, domestic violence • Health services greatly improved with new IHS Health Center • Tribe has many innovative and beneficial programs to address unique health needs of Reservation • Reservation lacks inpatient facilities, specialized care, dialysis center, fully certified emergency room • IHS Funding for contract care is inadequate to meet needs of unhealthy population • Medical transportation resources are inadequate to meet needs of population with low degree of personal mobility • Lack of on-Reservation nursing home for seniors
EDUCATION	Partly Deficient	• Parents have high degree of school choice due to presence of well-funded nearby public schools (Colstrip) and tuition-free private school (St. Labre); however, no longer free transportation to Colstrip • Substantial improvements in facilities at Lame Deer School District and Busby • Head Start program is well attended and funded • Reservation has its own community college • Lack of high school facility at Busby • Lame Deer schools are at full capacity • Reservation schools perform poorly – educational achievement is low, dropout rates are high • Not enough qualified Northern Cheyenne teachers

PROGRAM AREA	RATING	RATIONALE
SOCIAL SERVICES	Deficient	• Very high rates of poverty on Reservation • Very high rates of domestic violence and child abuse and neglect • Tribe devotes substantial resources of its own to care of its elders; however resources inadequate to meet needs of expanding population • Cash and in-kind assistance programs miss many needy Tribal members due to restrictive eligibility requirements and inadequate funding – households are turning to commodity and food voucher programs as resource of last resort • Child protection and welfare programs are poorly funded and staffed in relation to need – case workers have unrealistically high case loads • Inadequate funding for State court ICWA interventions • Inadequate number of foster parents on Reservation • Inadequate resources to support foster parents
EMPLOYMENT	Severely Deficient	• Unemployment a severe and chronic problem on Reservation • Lack of available jobs on or near Reservation • Funding for work experience and job training programs is inadequate – extensive waiting list for participation in programs • Lack of child care a barrier to employment – funding for subsidized child care inadequate – extensive waiting list for services • Lack of resources for prospective Tribal contractors and businesses

PROGRAM AREA	RATING	RATIONALE
RECREATION	Deficient	• High opportunity for dispersed outdoor recreation and cultural land uses • Wildlife resources are not intensively managed and may be over-harvested • Lack of developed recreational and cultural facilities
TRANSPORTATION	Deficient	• Reservation road network has been substantially improved • Lack of traffic code enforcement • High accident rate on Reservation roads • Lack of public transportation • Isolation from bus, rail and air transportation networks • Low levels of personal mobility

B. Vulnerabilities of Reservation Services and Facilities.

Because most Reservation services and facilities are so inadequate, they may be vulnerable to even small social and economic impacts resulting from off-Reservation development. These vulnerabilities are summarized below.

Housing. The Reservation's housing programs and facilities will be highly vulnerable to off-Reservation development if such development results in any increase in the Reservation population. There is already a severe housing shortage on the Reservation. Further population increases will only exacerbate overcrowding and result in accelerated deterioration of the existing housing stock. Reservation housing programs are woefully inadequate to address the current housing crisis and certainly cannot respond to any added demand for housing resulting from off-Reservation development.

Utilities. The utility system on the Reservation will be vulnerable of off-Reservation development if such development results in any increase in the Reservation population. The water systems in Ashland, Birney and Muddy Cluster and the sewer systems Reservation-wide are inadequate to keep up with current demand and will be further stressed by population increases. Likewise, further population increases will only make worse the Reservation's serious solid waste problem. Although a fee is charged for water and sewer service, these fees do not cover the cost of system upgrades or other infrastructure improvements.

Law Enforcement. The law enforcement system is highly vulnerable to the impacts of off-Reservation development if such development leads to an increase in crime. The law-enforcement system cannot handle any increase in crime and is especially ill-prepared to handle increases in crime involving non-Indians, over which the Reservation's law enforcement system has no jurisdiction.

Fire Protection. The Reservation fire department may be vulnerable to off-Reservation development if this development results in any increase in the frequency of spills of petroleum products and hazardous materials. The Reservation has no contingency plan and is ill-equipped to respond to spill and other emergencies. The Reservation's emergency response program is currently unfunded.

Health. The Reservation's health system is vulnerable to off-Reservation development if it places new unfunded demands on the Reservation's overtaxed health care system. Such demands are possible because the Tribe's ambulance service includes off-Reservation portions of the Tongue River valley in its service area and the Reservation's Health Center is the nearest emergency room to many off-Reservation areas that may be the focus of energy development. Although the Reservation's health care system can bill non-Indians for the services it provides, collection may be a problem especially if energy development companies do not provide health insurance for employees and their families. The Reservation health system will also be vulnerable if off-Reservation development were to increase the rate of chemical dependency, violence, or automobile accidents on the Reservation.

Education. The Reservation's education resources would be vulnerable to off-Reservation energy development if off-Reservation energy workers or their children were to use the Reservation's education resources. While the State provides basic support to the Lame Deer School District on a per-student basis, the District has little tax base and would be vulnerable if enrollments by non-Indians were to increase. The Reservation's community college is also vulnerable to these type of impacts, because the State subsidy for non-Indian students is far below the college's actual cost of providing educational services to these students.

Social Services. The Reservation's social services system would be vulnerable to off-Reservation energy development if the development induces Tribal members to return to the Reservation but does not result in concomitant increases in employment. Although funding for some social programs is based on need or program participation, this is not true for programs such as general assistance, low income energy assistance, and food vouchers. Increases in the number of unemployed may also result in increased rates of child abuse and neglect, further stressing the Tribe's already overtaxed child protection, welfare, and foster care programs.

Employment. The Reservation's employment programs could benefit from off-Reservation energy development if developers hire Tribal members as employees. History has shown, however, that this is likely to occur only if programs are in place that require

developers to institute programs to provide training, work experience, and employment to Tribal members.

Recreation. The Reservation's recreational resources may be vulnerable to off-Reservation energy development if the development results in a decrease in regional fish and wildlife populations or increases the number of non-Indians desiring to exploit these resources. The Tribe lacks the funding to enforce its fish and wildlife laws on the Reservation or even to monitor fish and wildlife abundance.

Transportation. The Reservation's transportation system would be vulnerable to off-Reservation energy development if the development results in increases in traffic on Reservation roads. Although many Reservation roads have been recently improved, increased traffic could contribute to increases in already high accident rates. Additionally, the Tribe has no legal authority to enforce its traffic laws against non-Indian workers and contractors passing through the Reservation.

CHAPTER 6

RESERVATION NATURAL RESOURCES

I. Physical Environment and Climate.

The Northern Cheyenne Indian Reservation is located in the Powder River Basin in southeastern Montana. It is located in the Northern Great Plains physiographic province and is part of the Yellowstone River Subbasin, which in turn is part of the Missouri River Basin. Drainage is generally northward by way of Rosebud Creek and the Tongue River. The Reservation is bordered on the west by the Crow Indian Reservation; on the east by the Tongue River; on the south by Cook Creek and the line dividing Townships 5 and 6 south; and on the north by the line dividing Townships 1 and 2 south. (HKM, 1982). It occupies portions of Big Horn and Rosebud Counties, with a total surface area of approximately 444,500 acres.

The general topography of the region is varied with long narrow ridges, extensive hillsides, and generally narrow flood plains. The altitudes within the Reservation range from about 4,730 feet above mean sea level (amsl) southeast of Busby to about 2,920 feet amsl on the Tongue River north of Ashland, Montana. The Reservation is within the unglaciated portion of the Missouri Plateau of the Northern Great Plains Province. The central portion of the Reservation is an upland plateau, which rises 800 to 1000 feet above the surrounding terrain, and is underlain by relatively flat-lying beds of the Fort Union Formation of Paleocene age. (HKM, 1975). This upland plateau has been deeply dissected by the Tongue River, Rosebud Creek, and their tributaries.

The woody vegetation on the uplands consists mostly of Ponderosa (yellow) Pine, while cottonwood trees predominate along the streams. Grasses dominate lower elevations with bluestem (western) wheatgrass and blue grama being the most common. The predominant shrub is big sagebrush, but broom snakeweed, silver sagebrush, fringed sagebrush, and skunkbrush are also common. (BOR, 1995).

The climate of the Northern Cheyenne Reservation is continental and semi-arid characterized by abundant sunshine, moderate relative humidity, moderate winds, low to moderate amounts of precipitation, and wide daily and seasonal variations in temperature. (HKM, 1982). The mean annual temperature is about 45 degrees Fahrenheit (F) with minimum and maximum temperatures ranging from -30 to above 100 degrees F. (BOR and the Northern CheyenneTribe, 1997). Precipitation in the area varies from month to month. Mean annual precipitation ranges from 10-14 inches in the lower elevations, to 15-19 inches in the higher elevations. About half of the annual precipitation occurs from April to June. (BOR and the Northern Cheyenne Tribe, 1997).

II. Water Resources.

The Northern Cheyenne Water Code identifies clearly the importance of the Tribal water resources and guidelines and provisions for water management, permitting and enforcement. The first two findings of the Code state:

- "The management and protection of water is a central attribute of tribal sovereignty and is vital to the health and welfare of the Reservation residents and to the vitality of the Reservation economy and environment," and

- "The water resource has cultural, spiritual, social, environmental and economic values that require protection and must guide the appropriate use and management of all resources in the watershed and drainage basins of the Reservation."

As with most communities within the arid western United States, the Northern Cheyenne Reservation is dependent upon a limited quantity of water, subject to laws and management governing the apportionment and use of such water. The quantity of surface water, including alluvial water, available to the Tribe, has been legally defined and set forth in detail and in a manner specific to the Tribe through the settlement of Winters Rights and through a compact with the State of Montana. The quality of surface water is governed by federal and state law and will soon be regulated by the Tribe pending the adoption of the draft water quality standards. Governance of groundwater is less well defined but is logically linked by association with surface water. The purpose of this water resources section is to describe the water resources of the Tribe and relationships between water resources on and off the Reservation.

A. Surface Water.

Map 4-3 of the Montana Statewide Draft Oil and Gas Environmental Impact Statement and Amendment of the Powder River and Billings Resource Management Plans (Predicted Number of CBM Wells by Watershed for Expanded Development Scenarios Regardless of Ownership) shows the estimated number of CBM wells by watershed. The principal watersheds of concern to the Reservation are the Rosebud Creek and Tongue River basins. Within the Montana CBM development area, these basins are estimated to have the greatest number of CBM wells developed in the future at 5,810 (Upper Tongue), 5,400 (Rosebud) and 5,180 (Lower Tongue) wells.

1. The Tongue River Basin.

The Tongue River has been studied extensively and many of the reports encountered are connected with studies of Northern Cheyenne Water Rights investigations and the Tongue River Dam Project. Much of the information presented in this section comes from reports associated with these studies.

The relationship of the Reservation to that of the general hydrologic workings of the region is critical to this section. The eastern portion of the Northern Cheyenne Reservation is located within the Tongue River basin, a tributary to the Yellowstone River, which is a tributary to the Missouri River. The Tongue River basin is extensive within both Wyoming and Montana.

Water resource issues are somewhat complicated due to the large contributing area associated with the watershed upstream of the Reservation. Generally among drainage basins of similar morphology, the larger will produce proportionately more runoff than the smaller, but also due to its greater size, it will tend to encompass a greater range and extent of upstream uses and associated impacts. Such upstream uses may be quite diffuse with regard to their aerial distribution throughout the watershed but may in fact constitute a significant collective impact to downstream users.

The fact that the Tongue River crosses state boundaries also increases risk and difficulty in the management of Tribal water resources, due largely to variation in state water policies and jurisdictions. Given the complexities of large-scale watershed management and the mobile nature of surface water, the condition of the Tribe's water resources is tied to off-Reservation land and water uses. Impacts to Tribal water resources may be cumulative in nature and effect. These off-Reservation watershed areas are included in the affected environment section of the Northern Cheyenne Reservation.

2. Principal Drainages.

The Tongue River and Rosebud Creek watersheds are the two principal drainages associated with the Northern Cheyenne Reservation. A small portion of the Sarpy Creek drainage area is present on the northwest corner of the Reservation. The Bighorn basin is not directly connected to the watersheds of the Reservation, yet the Tribe holds reserved water rights to a portion of the Bighorn River and it is therefore relevant as part of the affected environment of the Reservation. These drainages are summarized in Table 6-1 according to their relationship to the Yellowstone River.

There are many small tributaries to the Tongue River and Rosebud Creek. Some of Tongue River tributaries contribute flow upstream of the Reservation and along the Reservation's eastern boundary. Hanging Woman and Otter Creeks represent the main, off-Reservation tributaries, discharging from upstream of the Reservation, to the Tongue River from the east.

Second order tributaries tend to exhibit flow-gaining reaches in the headwaters of their drainages, which diminish with decreasing elevation. This is a function of higher precipitation and groundwater input occurring at higher elevations. Many of tributaries of the Tongue River and Rosebud Creek are intermittent and ephemeral in nature and are prone to occasional flooding. Maximum, minimum and average annual flows for the Yellowstone, Tongue and Rosebud Creek were calculated based on published USGS data for the shared period 1980-1999, these are shown in Table 6-2.

Table 6-1. Tributaries of the Yellowstone River associated with the Northern Cheyenne Reservation.

Major Tributary	First Order Tributary	Second Order Tributary	Origin On-Off Reservation
Yellowstone River	Tongue River	Hanging Woman Creek	Off
		Prairie Dog Creek	Off
		Cook Creek	Off
		Tie Creek	On
		Logging Creek	On
		Pawnee Creek	On
		Kelty Creek	On
		Otter Creek	Off
		Stebbens Creek	On
		Reservation Creek	On
	Rosebud Creek	Corral Creek	Off
		Trail Creek	On
		Davis Creek	Off
		Indian Coulee	On
		Muddy Creek	On
		Lynch Creek	Off
		Lame Deer Creek	On
		Greenleaf/Rye Grass Creek	On
	Sarpy Creek	Small portion of headwaters	On
	Bighorn River		Off

Adapted from USBR, 1995

The Yellowstone is the principal regional drainage of southern Montana and is tributary to the Missouri. The Yellowstone River flows predominantly east, northeast across Montana and passes through Forsyth, Montana about 45 miles north of the northern boundary of the Reservation. The Yellowstone joins the Missouri River in North Dakota about 30 miles east and downstream from the Montana border.

Table 6-2 – Twenty Year Maximum, Minimum and Average Annual Flows for Streams Relevant to the Northern Cheyenne Indian Reservation in Acre-Feet per Year. (USGS Records, 1980-1999)

USGS #	Stream	Maximum	Minimum	Average
6295000	Yellowstone River at Forsyth, MT	13,082,083	5,017,815	7,943,257
6295113	Rosebud Creek at Reservation Bndry near Kirby, MT	8,326	1,919	4,856
6295250	Rosebud Creek near Colstrip, MT	20,343	3,323	11,095
6307500	Tongue River at Tongue River Dam near Decker, MT	474,198	153,481	294,691
6308500	Tongue River at Miles City, MT	425,693	124,522	266,565
6309000	Yellowstone River at Miles City, MT	13,024,165	5,262,516	8,253,983

a. Tongue River.

The headwaters of the Tongue River are located in the Bighorn Mountains, within Wyoming, to the southwest of the Reservation. The Tongue River flows about 265 miles from its headwaters to its point of confluence with the Yellowstone River at Miles City, MT, and comprises the entire 47-mile eastern boundary of the Reservation. Over this distance

elevation ranges from about 123,000 feet to about 2,400 feet at Miles City, Montana. Precipitation ranges from 40 to 14 inches per year. The Tongue River flows in a fairly stable manner, in contrast to its lower tributaries and lower watersheds such as Rosebud Creek, which tend to be intermittent and are not sustained by snow pack. Annual peaks occur in May and June resulting from spring rains and melting snow pack, with a period of low flow following throughout the fall and winter. The Tongue River's main tributaries include Hanging Woman Creek, which enters the Tongue River upstream of the Reservation, Otter Creek, which enters the Tongue River along the eastern boundary of the Reservation, and Pumpkin Creek, which joins the Tongue downstream from the Reservation.

Figure 6-1 shows the greater Tongue River Watershed and the Northern Cheyenne Indian Reservation. About 32% (or about 1,607 square miles) of the total watershed area lies within Wyoming, while the remainder is located in Montana. The contributing area of the Tongue River watershed at its confluence with Cook Creek (the southeastern point of the boundary of the Reservation) is 2,588 square miles. The contributing area at the northeastern corner of the Reservation is 3,629 square miles. (HKM, TRB Hydrology, 1983).

i. Natural Flow Estimates.

HKM conducted a natural flow analysis to estimate undepleted flows of the Tongue River, which would be expected to occur at the Tongue River Gage (at Tongue River Dam), at the Tongue River gage below Brandenberg Bridge and at points corresponding to the Reservation's southeastern and northeastern corners. (1983). The study period for this analysis was 1940-1982 and was accomplished by analysis of gaged flow records from the gages appearing in Table 6-3.

Table 6-3 - Stream Gages and Available Flow Records for the Tongue River between Tongue River Reservoir and Tongue River below Brandenberg Bridge. (Adapted from HKM, 1983, TRB Hydrology, 1983)

Station Name	Period of Record	Station Number	Drainage Area (Square Miles)
Tongue River at Tongue River Dam, near Decker, MT[1]	May 1939 to 1982	06307500	1,770
Tongue River below Hanging Woman Creek near Birney, MT[2]	May 1967 to October 1973	42C 02000	2,552
Tongue River at the southern Reservation boundary[3]	April 1976 to September 1979	Tongue River #2	2,588
Tongue River at Birney Day School Bridge, near Birney, MT[1]	October 1979 to 1982	06307616	2,621
Tongue River at the northern Reservation boundary[3]	June 1977 to September 1979	Tongue River #1	3,629
Tongue River below Brandenberg Bridge, near Ashland, MT[1]	October 1979 to 1982	06307830	4,062

1 USGS, Water Resources Data, Montana, Volume 1, 1981 and provisional 1982 data from the Billings, Montana office of the USGS.

2 Department of Natural Resources, Montana Surface Water Records, Yellowstone River Basin, September 1977.

3 NCRP, Hydrologic Impacts from Potential Coal Strip Mining - Northern Cheyenne Reservation, Volume II, 1981.

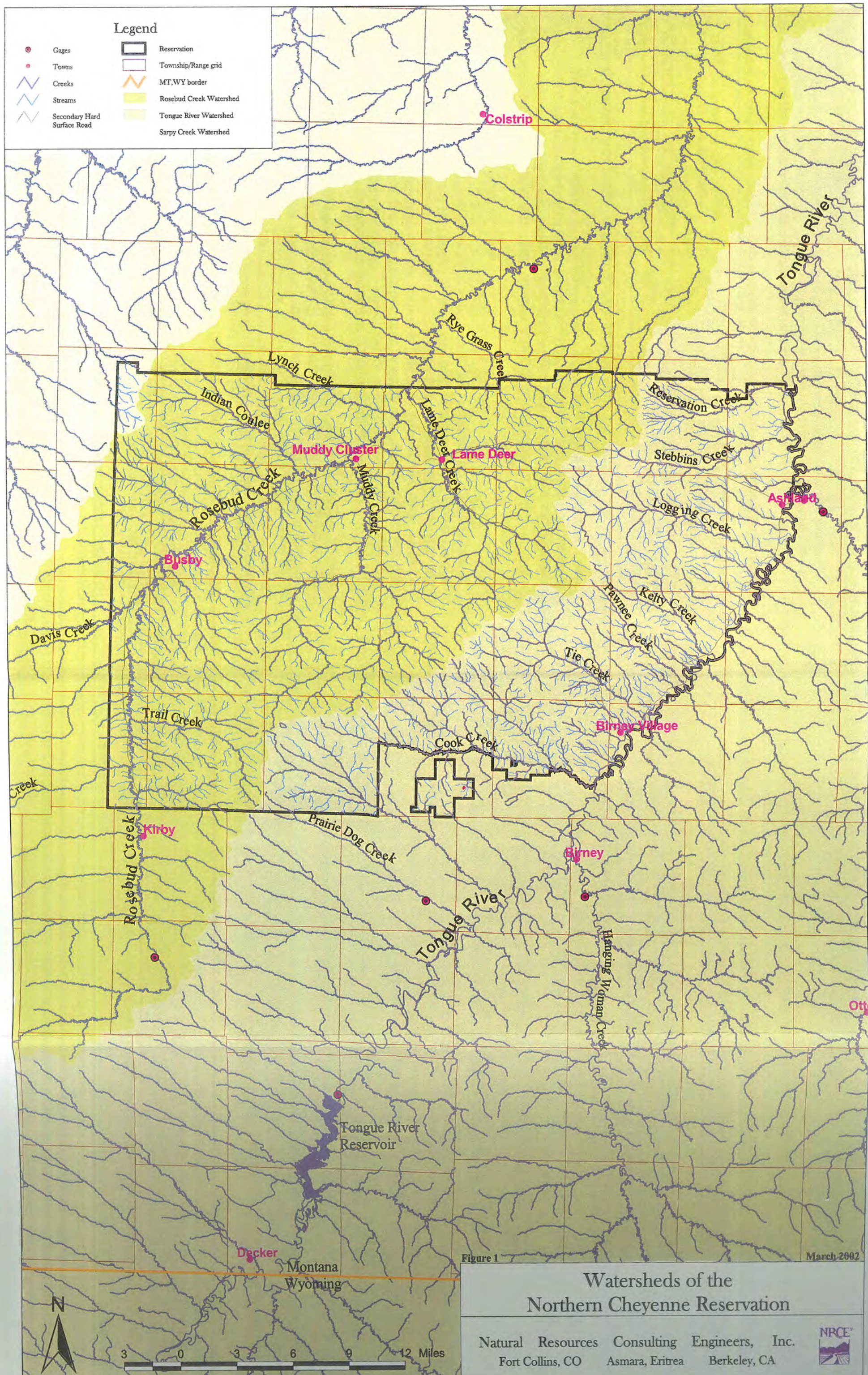

Legend
Gages
Towns
Creeks
Streams
Secondary Hard Surface Road
Reservation
Township/Range grid
MT,WY border
Rosebud Creek Watershed
Tongue River Watershed
Sarpy Creek Watershed
Colstrip
Tongue River
Rye Grass Creek
Lynch Creek
Indian Coulee
Lame Deer Creek
Reservation Creek
Muddy Cluster
Lame Deer
Stebbins Creek
Ashland
Rosebud Creek
Muddy Creek
Logging Creek
Busby
Pawnee Creek
Kelty Creek
Davis Creek
Tie Creek
Trail Creek
Birney Village
Cook Creek
Creek
Kirby
Prairie Dog Creek
Rosebud Creek
Birney
Tongue River
Hanging Woman Creek
Tongue River Reservoir
Decker
Montana
Wyoming
N
3 0 3 6 9 12 Miles
Figure 1
March 2002
Watersheds of the
Northern Cheyenne Reservation
Natural Resources Consulting Engineers, Inc.
Fort Collins, CO Asmara, Eritrea Berkeley, CA
NRCE

Table 6-4 shows the average annual gage flows and estimated natural flows for the Tongue River and Brandenberg gages, along with the estimated natural flows expected to occur at the Reservation boundaries, based on the study period 1940-1982.

Table 6-4 - Average Annual Gage and Estimated Natural Flows for the Tongue River near the Northern Cheyenne Reservation. (study period 1940-1982, HKM, 1983)

Location	Flow Type	Acre-Feet/Year
Tongue River at Tongue River Dam	Gage Flow	332,907 (St. Dev.=112,406)
	Est. Natural Flow	421,238 (St. Dev.=102,464)
Southern Boundary of Reservation	Est. Natural Flow	439,253 (St. Dev.=106,154)
Northern Boundary of Reservation	Est. Natural Flow	455,161 (St. Dev.=103,255)
Tongue River at Brandenburg Bridge	Gage Flow	362,614 (St. Dev.=152,288)
	Est. Natural Flow	461,019 (St. Dev.=104,352)

ii. Descriptions of Select Tongue River Tributary Basins.

There are many tributaries to the Tongue River upstream of the Reservation. Land use within these tributary basins is important to the hydrology of the Reservation because natural surface drainage from these watersheds can effectively accumulate and transport pollutants into the Tongue River. The principal drainages are described below.

1. Hanging Woman Creek

The watershed of Hanging Woman Creek receives about 12 inches of precipitation annually and drains an area east of the Tongue River. Of the Tongue River tributaries within Montana and upstream of the Reservation, the Hanging Woman Creek watershed is the largest in area and annual discharge, at 516.8 square miles and 7,500 acre-feet per year, respectively. Its confluence with the Tongue is just upstream of the Town of Birney or about six river miles upstream from the southern Reservation boundary. (Cannon, 1989).

Extensive CBM development in the Wyoming portion of the Hanging Woman Creek watershed was not addressed in the Draft CBM EIS. (BLM, 2002). Facilities and storage reservoirs associated with existing CBM development are common throughout this area similar to that of the drainages west of the Tongue River near Decker, Montana. Such facilities are visible and include storage impoundments commonly constructed within small tributary drainages for purposes of containing water extracted from wells as part of CBM recovery.

2. Prairie Dog Creek

Prairie Dog Creek is an intermittent stream formed by a small drainage south of the Reservation feeding the Tongue River from the east. It is typical of the smaller drainages that incise the slopes from the Wolf Mountains west of the Tongue River. This area is characterized as relatively steep and dissected from the Tongue River Valley, upslope up to the tributary headwaters region, which is

considered a plateau-like erosional remnant. (Cary, 1982). These creeks receive the majority of flow from precipitation and groundwater accretions within the upper reaches of their drainages.

The watershed of Prairie Dog Creek receives about 13 inches of precipitation annually and is approximately 25 square miles in area. Based on a short USGS record, the creek produced 29 acre-feet of runoff during the water year 1979-1980, at a gage representing about 19 square miles of the total watershed. (Cary, 1982). Prairie Dog Creek is similar to Bull Creek, which is the next downstream tributary, the headwaters of which drain a small part of the Reservation to lands off the Reservation.

3. Cook Creek

Cook Creek derives its flow from surface water runoff and groundwater input, however groundwater is the dominant source. (NCRP, 1981). Cook Creek forms the southern boundary of the Northern Cheyenne Reservation, from the 10th Guide Meridian, west and is within the Lower Tongue Basin. (BLM, 2002). Its confluence with the Tongue River defines the southeast point of the Reservation and the corner at which the Tongue River begins the eastern boundary of the Reservation. The watershed of Cook Creek receives about 13 inches of precipitation annually and drains Reservation and non-Reservation lands, west of the Tongue River.

At its confluence with the Tongue River, approximately four miles downstream from the Town of Birney, Cook Creek's watershed is about 70 square miles producing an average annual flow of about 4,500 acre-feet per year. (Cannon, 1982). The average elevation of the watershed is about 3,800 feet. Various potential damsites were located on Cook Creek for purpose of storing water. (HKM, 1974). HKM describes Cook Creek as an intermittent, spring fed stream, which is prone to moderate flooding.

4. Otter Creek

Otter Creek is an important drainage within the vicinity but off of the Reservation. Otter Creek's watershed is about 710 square miles and is directly tributary to the Tongue River adjacent to the Reservation. For its relatively large area, Otter Creek generates only a small average annual flow of about 3,502 acre-feet per year, according to the USGS gage 06307740 at Ashland, for 1973-1994. However, this large watershed is capable of producing large peak flow events. The confluence of Otter Creek and the Tongue River is located near the town of Ashland. Most of the land area drained by Otter Creek is part of Custer National Forest, though the mainstem is surrounded by private surface, which is underlain by federal and private minerals.

According to short-term precipitation data, the upper Otter Creek watershed received about 19 inches of precipitation annually during the period 1983-1984 as measured at 4,064 feet elevation. During this period, 13.3 inches of annual average precipitation was measured at Birney, at 3,190 feet elevation. (McClymonds, 1988). Precipitation near Ashland is closer to 13 inches per year, which explains the characteristic gaining nature of the stream in the upper reaches and flows that diminish at lower elevations.

5. Tongue River Tributaries on the Reservation

The main creeks draining from within the Reservation directly to the Tongue River include Tie, Logging, Pawnee, Kelty, Stebbens and Reservation Creeks. The area drained by these creeks is generally east sloping and opposite the Rosebud Creek drainage to the west. The drainage area formed by these tributaries is considered part of the Lower Tongue Basin. (BLM, 2002). According to the NCRP (1981), Logging Creek is supported by both surface water runoff and groundwater discharge. Because of the similarity of Logging Creek to other creeks draining the eastern part of the Reservation, it is likely that the hydrology is also similar for these creeks.

- Tie Creek contributes flow directly to the Tongue River, draining an area entirely within the boundaries of the Reservation. At its confluence with the Tongue, Tie Creek has a watershed area of about 52 square miles, which receives about 13 inches of precipitation per year and produces an annual average discharge of about 3,770 acre-feet.

- Logging, Pawnee and Kelty Creeks receive about 13 inches of precipitation per year and collectively drain an area of about 95 square miles entirely within the Reservation to the Tongue River.

- Stebbens and Reservation Creeks have a combined watershed area of about 50 square miles, which is within the Reservation boundaries. The area receives about 14 inches of annual precipitation and contributes about 4,060 acre-feet per year to the Tongue River.

b. Rosebud Creek.

Rosebud Creek drains the western part of the Reservation and receives flow from surface water runoff and groundwater input, mostly from within the Reservation. The headwaters of Rosebud Creek are centered near the southwestern corner of the Northern Cheyenne Reservation and occupy non-Reservation areas to the south and Crow Indian Reservation lands to the west and southwest, in the Wolf Mountains. Rosebud Creek flows approximately 100 miles with the headwaters at nearly 5,000 feet in elevation and its confluence with the Yellowstone River at about 2,500 feet.

The watershed area at the southern boundary of the Reservation is slightly over 100 square miles and about 640 square miles at the northern boundary of the Reservation, a distance of about 30 miles. The watershed receives about 15 inches of average annual precipitation and produces annual flows of 6,850 acre-feet and 25,000 acre-feet at the northern and southern Reservation boundaries respectively.

Lame Deer and Muddy Creeks form the principal drainages within the Reservation. These creeks contribute water to Rosebud Creek at their respective confluences within the Reservation. Other creeks like Rye Grass, Miller and Green Leaf Creeks begin on the Reservation but discharge to Rosebud Creek off of the Reservation. Rosebud Creek is highly variable from year to year and month to month. Peak flows are a result of snowmelt, precipitation and runoff occurring from late winter through midsummer. Maintenance of flow during the remainder of the year is governed to some extent by groundwater input and spring flow. Much of the total accretion of Rosebud Creek takes place on the Reservation and diminishes downstream.

i. Natural Flow Estimates

HKM (1982, RCB Hydrology) conducted a streamflow analysis of Rosebud Creek based on correlation of available gage records. In order to develop a more complete understanding of historical stream flow in Rosebud Creek, HKM correlated these data with complete and long-term data from a selected reach of the Bighorn River. The resulting synthetic gage record for Rosebud Creek was assumed to closely approximate natural flow conditions of Rosebud because depletions are considered negligible.

In this analysis flow estimates were developed for Rosebud Creek at its mouth, near its confluence with the Yellowstone River, at a location near Colstrip (near the northern Reservation boundary) and near the southern Reservation Boundary (just downstream of Kirby). The study period for this analysis was 1939-1981 and was accomplished by analysis of gaged flow records from the gages appearing in Table 6-5.

Table 6-5 - Stream Gages and Flow Records for Rosebud Creek. (HKM, 1982; RCB Hydrology)

Station Name	**Period of Record**	**Station Number**	**Drainage Area (Square Miles)**
Rosebud Creek at the Southern Reservation Boundary, near Kirby[1]	June 1977 to 1981	06295113	102
Rosebud Creek at the Northern Reservation Boundary[2]	June 1977 to 1980	RC #1	638
Rosebud Creek near Colstrip, MT[1]	October 1974 to 1981	06295250	799
Rosebud Creek near Rosebud, MT[1]	July 1939 to 1981, inc.	06296003	1,302
Muddy Creek 2	May 1978 to September 1979	MC #1	103
Lame Deer Creek 2	April 1977 to April 1978, inc.	LDC #1	82

1 USGS, Water Resources Data, Montana.

2 Northern Cheyenne Research Project, Hydrologic Impacts from Potential Coal Strip Mining - Northern Cheyenne Reservation, Volume II, 1981.

Table 6-6 shows the average annual gage flows and estimated natural flows for Rosebud Creek, along with the estimated natural flows expected to occur at the Reservation boundaries, based on the study period 1939-1981.

Table 6-6 - Average Estimated Natural Flows for Rosebud Creek, Northern Cheyenne Reservation. (study period 1939-1981)

Estimated Natural Flow at Location	**Acre-Feet/Year**
Rosebud Creek at Southern Boundary	11,818 (St. Dev. = 6,417)
Rosebud Creek neat Colstrip, Near Northern Boundary	26,727 (St. Dev. – 14,172)
Rosebud Creek near Mouth, Near Rosebud	27,297 (St. Dev. = 18,439

HKM, RCB Hydrology, 1982.

ii. Descriptions of Selected Rosebud Creek Tributaries

1. Muddy Creek

Muddy Creek is one of the major tributaries of Rosebud Creek, within the Reservation. At its confluence with Rosebud Creek, Muddy Creek has a watershed area of about 103 square miles and produces an average annual flow of about 4,540 acre-feet per year. The basin receives an average of about 15 inches of precipitation annually.

2. Black Spring Coulee and Lynch Coulee

Combined, these two tributaries of Rosebud Creek have a watershed area of about 28 square miles, and drain lands from within the Reservation. The watershed receives an average of about 15 inches of precipitation annually and produces an average annual flow of about 1,875 acre-feet per year.

3. Lame Deer Creek

Lame Deer Creek is another major Reservation tributary to Rosebud Creek. It receives an average of about 16 inches per year precipitation and produces a flow of about 5,620 acre-feet per year from a watershed area of about 82 square miles.

4. Rye Grass, Miller and Green Leaf Creeks

These creeks collectively drain about 33 square miles of land before exiting the Reservation. The watersheds receive an average of about 16 inches of precipitation per year. The average annual flow from the Reservation portion of the watershed is about 3,600 acre-feet per year.

c. Bighorn River

The Bighorn River drains the western side of the Bighorn Mountains in Wyoming, and part of the eastern Wind River Mountains by virtue of the Wind River, Wyoming. The eastern part of the Absaorka Range of Wyoming is also drained to the Bighorn River by

the Greybull and Shoshone Rivers. The Yellowtail Dam, in Montana, creates the Bighorn Reservoir, which straddles the Wyoming-Montana border.

While no part of the Northern Cheyenne Reservation lies within the Bighorn River basin, the Tribe does have a water right to 30,000 acre-feet of water from Bighorn Reservoir. The Northern Cheyenne -Montana Compact specifically addresses this in under Article II A, Section 7:

> a. Tribal Allocation. As a part of the Tribal Water Right, the Secretary of the Interior shall allocate 30,000 acre-feet per year of stored water in Bighorn Reservoir, Yellowtail Unit, Lower Bighorn Division, Pick-Sloan Missouri Program, Montana, measured at the dam, for use or disposition by the Tribe for any beneficial purpose, either on or off the Reservation, pursuant to the terms of this Compact. This allocation is subject to the prior reserved water rights, if any, of any Indian tribe, or of persons claiming water through that tribe, to that water. Any use or disposition of water from Bighorn Reservoir off the Reservation by the Tribe is subject to the specific provisions relating to such use or disposition in any act of Congress ratifying this Compact.

Holding this water right makes the Tribe a stakeholder in the condition and function of the Bighorn watershed. As the condition and function of the watershed as a resource governs the quantity and quality of Tribal property, it therefore merits presentation as a potentially affected environment.

3. Surface Water Storage.

As part of a discussion of Reservation water resources, it is necessary to address existing and proposed surface water storage facilities, relevant to the Reservation. Tongue River Dam is an existing structure impounding water within the Tongue River Reservoir. The Tribe also has water rights to the Bighorn River, from Yellowtail Dam. Water storage facilities considered for Cook and Rosebud Creeks are proposed and represent potential projects considered by the Northern Cheyenne. These potential projects were developed as preliminary designs by HKM (1973 and 1974) for purposes of Reservation water resource investigations.

a. Tongue River Dam

As a major stakeholder in the Tongue River Project, it is necessary to identify the project as part of the affected environment of the Reservation. The Tongue River Dam is located 15 miles upstream of the southern boundary of the Reservation and was originally completed in 1940. Subsequent modification of the Dam entailed raising the crest height and increasing storage capacity to 80,000 acre-feet. Such modification was specified as a directive to the Secretary of the Interior for several purposes including the partial fulfillment of the Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992.

According to the Tongue River Basin Project, Final Environmental Statement (1996):

> The Tongue River Project is being proposed to alleviate dam safety concerns and protect downstream lives and property, to protect all existing water rights held in the Tongue River Reservoir, and to provide an additional 20,000 acre-feet of water to the Tribe. An additional requirement of the project involves the enhancement of fish and wildlife resources and habitat in the Tongue River Basin. All project goals are components of the Settlement Act, which ratified the Northern Cheyenne - Montana Water Rights Compact (Compact) entered into on June 11, 1991 by the Northern Cheyenne Tribe and the State of Montana

Significant issues were identified by the project sponsors relating to the modification of the dam to the Reservation. These include the effects on aquatic resources within the reservoir and river upstream and downstream of the reservoir, effects on the Decker coal mines adjacent to the reservoir, effects on Indian trust asset/Federal trust asset responsibility and potential effects of Tribal water development scenarios. Future alterations to upstream land use and hydrology may be significant, specifically with regard to water quality and sediment transport relationships governing the function of the reservoir and its discharge to the Reservation.

b. Yellowtail Dam (Bighorn River)

The Yellowtail Dam was completed in 1967 and stores about 1,375,000 acre-feet of water and discharges an average of 2,604,000 acre-feet per year. The upstream watershed encompasses 19,650 square miles, most of which are in Wyoming. (BOR, Project Data 1981). The Tribe's water right for 30,000 acre-feet of water specifies that the water will be made available from and measured at Yellowtail Dam. Because the Tribe is not required to use this water specifically on the Reservation, and to do so would require major infrastructural development for purposes of transbasin diversion, it is possible that this water will be used in exchange for more easily developable water or marketed. In either case, the quantity and quality of this water are subject to conditions upstream of Yellowtail Dam, i.e., production and storage, and below the dam, in the case of transport and "wheeling" of water.

c. Cook and Rosebud Creek Basins

No storage facilities presently exist within these drainages, however, the Tribe as part of its assessment of water resources has explored the possibility of developing storage facilities at various locations. HKM Consulting Engineers conducted studies of two alternatives for a dam within the Cook Creek drainage and a study of two alternatives within the Rosebud Creek drainage. (HKM, 1973; HKM, 1974). These studies were regarded as preliminary designs for purposes of evaluating options for future water resources development on the Reservation.

4. Water Quality.

The quality of surface water within the watersheds previously discussed is important to the Northern Cheyenne Reservation. Water quality concerns can be divided spatially according to the source watersheds. These are watersheds which generate flow on the Reservation, those which generate flow off the Reservation and transport water to it, and then the Bighorn River, which flows neither from nor to the Reservation, but to which the Tribe has water rights. Table 6-7, entitled Impaired Waterbodies in Area of Maximum CBM Potential, was modified from the Draft EIS to show only the watersheds pertinent to the Reservation. (BLM, 2002). It provides a general list of probable causes and sources of impairment for the each watershed listed.

Table 6-7 - Impaired Water Bodies in the Area of Maximum CBM Potential, Relevant to the Reservation.

Watershed	**Impaired Water Body**	**Probable Cause of Impairment**	**Probable Source of Impairment**
Upper Tongue	Hanging Woman Creek	Flow Alteration Metals Salinity/TDS/Chlorides	Agriculture Irrigation Natural Sources
Upper Tongue	Tongue River Reservoir	Nutrients Organic Enrichment/DO Suspended Solids	Agricultural Municipal Point Sources
Upper Tongue	Upper Tongue River	Flow Alteration	Agriculture Irrigation Natural Sources
Upper Tongue	Tongue River (from Reservoir to. Hanging Woman Creek)	Flow Alteration	Agriculture Flow Regulation/ Modification
Lower Tongue	Tongue River (from dam to mouth)	Flow Alteration Metals Other Organics Salinity/TDS/Chlorides Suspended Solids	Agriculture Flow Regulation/ Modification Irrigation Natural Sources
Lower Tongue	Otter Creek	Metals Other Habitat Alts Salinity/TDS/Chloride Suspended Solids	Agriculture Highway/Road/ Bridge Construction Land Development Natural Sources
Rosebud	Rosebud Creek	Flow Alteration Metals Nutrients Other Organics Salinity/TDS/Chlorides Suspended Solids	Agriculture Irrigation Natural Sources

Watershed	Impaired Water Body	Probable Cause of Impairment	Probable Source of Impairment
Lower Bighorn	Bighorn River (MT43P003-1)	Metals Salinity/TDS/Chlorides Suspended Solids Thermal Modifications pH Other Inorganics Siltation	Agriculture Flow Regulation/ Modification Natural Sources Upstream Impoundments
Lower Bighorn	Bighorn River (MT43P005-1)	Metals Salinity/TDS/Chlorides Suspended Solids Thermal Modifications pH Flow Alteration Nutrients Other Organics	Agriculture Flow Regulation/ Modification Natural Sources Upstream Impoundments
Lower Bighorn	Bighorn River (Tullock Creek MT43P006-1)	Metals Salinity/TDS/Chlorides Suspended Solids Nutrients Other Inorganics	Agricultural Irrigation Natural Sources

(From 1996 Montana 303(d) List; BLM, 2002)

As can be seen, there are many sources of impairment with potential upstream effects on the Northern Cheyenne surface water quality. In addition, water quality on the Reservation has been heavily impacted by cattle grazing around springs and along streams, causing increasing sediment and nutrient levels. (Northern Cheyenne Tribe and BIA, 1999).

The magnitude of information relating to surface water quality is tremendous and to comprehensively address the broad topic of water quality as it relates to surface waters of the Northern Cheyenne Indian Reservation is beyond the scope of this section. The following represents an attempt to provide some additional water quality information for the Reservation which is pertinent to CBM development on and off the Reservation.

a. Sodium Adsorption Ratio (SAR)

The Draft EIS presents a table regarding surface water quality within the CBM development area of Montana. (BLM, 2002). It is entitled Surface Water Quality by Watersheds and provides a summary of water quality in terms of the parameter known as Sodium Adsorption Ratio (SAR). Information from this table was gleaned to focus on the watersheds that directly impact the Northern Cheyenne Reservation and Tribal water resources. (Table 6-8).

The SAR is commonly used as an indicator to predict the degree to which irrigation water tends to enter into cation-exchange reactions in soil. Higher values indicate a potential hazard of sodium replacing adsorbed calcium and magnesium. This condition

causes the breakdown of the structure of specific clay soils, which results in reduction of the soil's permeability, aeration and farmability. SAR is an important measure of irrigation water. (Hanson, 1999). Values for SAR are included in chemical analysis of irrigation water; however, the value is empirical and of otherwise limited geochemical significance. (Hem, 1992).

Table 6-8 - Average Base Flow, Average High Flow and corresponding SAR Values for Select Watersheds Relevant to the Northern Cheyenne Reservation. (Values from Preliminary CBM EIS, no period of record given)

		Average Base Flow		Average High Flow	
Location	**USGS Gage #**	**CFS**	**SAR**	**CFS**	**SAR**
Upper Tongue (at state line)	06306300	181	NA	1,724	NA
Upper Tongue (at Tongue R. Dam near Decker	0630750	175	1.1	1,467	0.4
Lower Tongue (near Birney Day School)	06307616	185	1.4	1,202	0.4
Lower Tongue (near Ashland)	06307830	206	NA	2,073	NA
Lower Tongue	06308500	194	2.4	1,305	0.6

SAR is not a complete indicator of water quality. The composition of water for irrigation purposes, or any other purpose, cannot be judged solely on the basis of it, or on the total concentration of ions. The determination of water quality includes a determination of individual ions present as well as suspended solids, biological contamination indicators, pH, presence of metals, temperature, organic hydrocarbons, etc.

b. Existing Water Quality Data

The USGS has collected water quality data at various streamflow gaging stations pertinent to the hydrology of the Reservation. Basic data were acquired from the USGS website and grouped according to sampling parameters provided. These data sets vary somewhat in the scope, intensity, and duration of sampling and parameters represented. For each parameter, data sets are comprised of discreet samplings, which are generally non-continuous in nature. Time periods vary from parameter to parameter. Available data are presented for each station as average, monthly summaries of measured values for each parameter monitored.

i. Bighorn River

Water quality data is monitored at various locations along the Bighorn River. The data represent that collected at USGS Station 6294000, near Hardin, Montana, for the parameter composite period 1969-1999. (Table 9; see Appendix D). Particular parameters of interest include specific conductance (SC) and SAR. Average SC ranges from 490 to 957 micro-siemans per centimeter, and average SAR ranges from 0.58 to 2.02.

ii. Tongue River

The waters of the Tongue River are also monitored at locations upstream of the Reservation including USGS Station 6306300, at the Wyoming/Montana state line (Table 10; see Appendix D). Previous studies indicated that several constituents exceeded safe drinking water standards, specifically sulfate, dissolved magnesium and total dissolved solids (TDS). The values cited by HKM were 500 ppm for sulfate, 50 ppm for magnesium and annual average of 543 ppm for TDS, for the year 1966. (HKM, 1972). A comparison of these figures, along with corresponding, long term average data from USGS State line gage are presented in Table 6-9.

Table 6-9 - Comparison of Previously Cited Water-Quality Parameters with long-term Average Figures, Tongue River at State line.

Data Source	Range	Sulfate (mg/l)	Dissolved Magnesium (mg/l)	EC (uS/cm)	SAR	Boron (ug/l)
HKM (1972)	High	500	50	1100	2.0	0.38
	Low			230		
USGS (1985-1999 average)	Mo. Average High	180	45	699	0.67[1]	<1
	Mo. Average Low	30	10	299		

[1] SAR = 0.67 reflects published USGS data for water year 1997, as parameter 00931 SAR is not included in data set available on USGS website.

The statements made in previous investigations regarding constituent concentrations, as reflected by averages of available data, and indicate, in general, that the Tongue River is not suitable for drinking (without treatment) but is suitable for irrigation, stock watering and recreation. Observations of water quality made downstream of Tongue River Dam may be obscured due to the tendency of the reservoir to dilute, modify chemically and delay in time, the transportation of contaminants to the Reservation. The complexity of Tongue River water quality at the Reservation, is further complicated by the episodic events characteristic of ephemeral drainages located upstream of the Reservation. These drainages will tend to transport potential pollutants resulting from high intensity, short duration storms, which will generate small or broad scale flooding and possibly retention pond failures. Monitoring of flows and water quality parameters like specific conductivity, at the various points of principal drainages to the Tongue River will likely become more important in the future.

iii. Select Tongue River Tributaries

Several Tongue River tributaries near the Reservation have been monitored for water quality constituents. These include Otter Creek, Hanging Woman Creek, and Prairie Dog Creek. (Tables 12 through 14; see Appendix D). No water quality data were located with regard to Cook Creek. Data that were available represent monthly averages. Waters of these Tongue River tributaries have generally higher constituent concentrations than that of the Tongue River.

The USGS has studied Hanging Woman and Upper Otter Creek to estimate effects of surface coal mining on hydrology and water quality. With regard to Otter Creek, the USGS noted that water samples from Otter Creek were similar to water samples from wells completed in the alluvium. The samples contained large concentrations of sodium, magnesium, and sulfate. Dissolved-solids concentrations in the Otter Creek samples were 3,600 to 4,080 mg/L. (McClymonds, 1988).

With regard to Hanging Woman Creek, near Birney, Montana, the USGS noted that dissolved-solids concentrations vary greatly with location and with magnitude of discharge. In general, concentrations decrease downstream and also decrease during large increases in streamflow. The largest concentration of dissolved solids (14,000 mg/L) was measured at station 063075450 near the Montana-Wyoming State line on June 8, 1983. Large concentrations of dissolved solids are common during the summer, when streamflow is small or the water becomes ponded or stagnant. Salt deposits accumulate along the streambanks during extended periods of low streamflow or stagnant water. (Cannon, 1989).

At station 06307600 near Birney and the mouth of Hanging Woman Creek, dissolved-solids concentrations were substantially smaller than at upstream stations. Analysis of 117 water samples collected at the station between October 1974 and November 1987 at discharges that ranged from 0.01 to 360 ft 3/sec showed that dissolved-solids concentrations ranged from 180 to 3,200 mg/L, with a median concentration of 1,800 mg/L. (Cannon, 1989).

The downstream decrease in dissolved-solids concentrations can be explained by the increase in streamflow derived from shallow groundwater discharge. The downstream part of the Hanging Woman Creek basin has a much greater area of clinker beds than the upstream part and discharges more groundwater having smaller concentration of dissolved solids. (Cannon, 1989).

Near Birney, magnesium, sodium and sulfate concentrations were 46-230 mg/L, 29-500 mg/L and 98 mg/L. It was noted that sodium concentrations in the upstream part of Hanging Woman Creek near the State line (station 06307540) were as large as 2,700 mg/L in June 1983. The SAR ranged from 1 during high streamflow near Birney to 17 near the State line. The SAR of water in Hanging Woman Creek indicates a medium to high salinity hazard for irrigation of crops (U.S. Salinity Laboratory Staff, 1954) except during periods of high streamflow, when dissolved-solids and sodium concentrations are smaller.

Sulfate was the dominant anion in all samples from Hanging Woman Creek. Sulfate concentrations ranged from 98 mg/L during high streamflow near Birney to 9,900 mg/L at the State line. Sulfate concentrations decrease downstream, similar to concentrations of other major ions. (Cannon, 1989).

These observations reflect mostly natural hydrologic and geohydrologic conditions, where the stream water quality is function of natural runoff and groundwater discharge and specifically the contributions of higher quality water emanating from the clinker deposits. Without such contributions, water quality generally becomes worse with flow distance and decreasing flow. The storage of high TDS water in constructed impoundments within the watershed may alter the loading of constituents to the Tongue River, if such stored waters are in some manner mobilized into and through the streamcourse.

iv. Rosebud Creek

Rosebud Creek water quality parameters are presented in Tables 15 and 16 (Appendix D) corresponding to USGS gage 06295100 near Kirby, Montana and 06295250 near Colstrip, Montana. Specific conductivity, which is a surrogate indicator of total dissolved solids ranges from 955 to 1,340 uS/cm at Kirby and 1,073 to 1,625 uS/cm at Colstrip. On this basis, total dissolved solids increases with flow miles. High specific conductivity or TDS values concur with low flow. Monthly averaged data from Colstrip indicate that concentrations of magnesium and sulfate range from 78-116 mg/L and 280-482 mg/L respectively. SAR values range from 1.2-1.7 at Colstrip.

B. Groundwater Resources.

As described earlier, the Northern Cheyenne Indian Reservation lies in the northwestern part of the Powder River Basin in the southeastern part of Montana and encompasses potions of Rosebud and Bighorn Counties. Altitudes within the Reservation range from 2,920 feet north of Ashland to about 4,730 feet near Bull Elk Lookout Tower southeast of Busby. The topography is rough with long narrow ridges, extensive hillsides and generally narrow flood plains. The central portion of the Reservation is an upland plateau, which rises 800 to 1,000 feet above the surrounding terrain. This upland plateau has been deeply dissected by the Tongue River, Rosebud Creek and their tributaries. (HKM, 1983).

1. Geologic Units and Associated Aquifers.

Formations of importance to the groundwater resources of the Reservation include the Madison Group of Mississippian age; the Fox Hills Sandstone and Hell Creek Formation of Cretaceous age; the Fort Union Formation of Tertiary age and the valley fill-alluvium of Quaternary age. Information pertaining to the groundwater resources on the Reservation was obtained primarily from HKM Associates, Shallow Groundwater Study (1983) unless otherwise cited.

a. Madison Group

The Madison Group is divided into the Lodgepole Limestone at the base, the Mission Canyon Limestone and the Charles Formation at the top. The Madison Group is estimated to average around 1,100 feet thick within the Reservation and the depth to the top is estimated to range between 7,200 and 9,100 feet below land surface. The aquifer contained within the Madison Group reportedly consists of extensive limestone and dolomite with shale, evaporate, and cherty zones. (NCRP, 1981). Yields from Madison wells in the area range from 94 gpm immediately NW of the Reservation to a reported 2,382 gpm from a flowing well approximately 90 miles NW of the Reservation.

Porosity and permeability in the Madison aquifer are mainly associated with oolitic to fragmental limestone and with coarsely crystalline dolomite in the lower part. Solution and collapse breccias occur in the outcrops off the Reservation; the extent of these features in the subsurface within the Reservation is unknown.

b. Fox Hills Sandstone

The Fox Hills Sandstone, in the central Powder River Basin east of the Reservation, is a sequence of marine and continental sandstone and shale 20 to 200 feet thick. Limited information available from oil and gas test holes on the Reservation indicates thickness of this unit to range from 65 to 760 feet. Depth to the top of the Fox Hills in the Reservation is estimated to range between 2,200 and 3,500 feet.

The most extensively used aquifer in the Central Powder River Basin is called the Fox Hills-Lower Hell Creek aquifer and it consists of the Fox Hills Sandstone and the overlying lower part of the Hell Creek Formation. Well yields from the Fox Hills-Lower Hell Creek aquifer range from 0.5 to 20 gpm and commonly are about 5 gpm. Yields of as much as 200 gpm to industrial wells have been reported. (Slagle, 1985).

c. Hell Creek Formation

The Hell Creek Formation consists of sandstones, interbedded shales and siltstones. Available data indicates this unit underlies the entire Reservation with a thickness of between 600 and 650 feet. Depth to the top of the Hell Creek formation within the Reservation is estimated to be greater than 600 feet.

Only one well is known to be completed in the Hell Creek formation near the Reservation. It was drilled in 1959 for Saint Labre Mission to a total depth of 980 feet. At the time the well was constructed, it was under artesian pressure and flowed at the land surface at a rate of 60 gpm.

d. Fort Union Formation

The Fort Union Formation consists of the Tullock, Lebo Shale, and Tongue River members. The total thickness of this formation within the Reservation is estimated to range from 1,800 to 2,200 feet. The formation dips to the southeast at 1 to 2 degrees regionally.

i. Tullock Member

The Tullock member is estimated to range between 100 and 250 feet thick on the Reservation and consists of sandstone, coal and shale beds. This unit is not a known source of water on the Reservation. Yields to wells completed off the Reservation in the Tullock Member range from about 0.3 to 40 gpm and generally are about 15 gpm. (Slagle, 1985).

ii. Lebo Shale Member

The Lebo Shale member consists of dark shale and reportedly contains some lignite beds but no coal. The thickness of this unit on the Reservation is estimated to range between 100 and 300 feet. It is not a known source of water.

iii. Tongue River Member

The Tongue River Member of the Fort Union Formation is the major source of water withdrawn from wells in the northern Powder River Basin. (Slagle, 1985). It is the most reliable and shallow aquifer underlying most of the area, including the Northern Cheyenne Reservation. HKM Associates (1983) have divided this member into lower and upper aquifers.

There are over 100 springs on the Northern Cheyenne Reservation. (Figure 6-2). Many of these springs emanate from the base of a clinker-shale contact, very commonly in the Tongue River Member of the Fort Union Formation. The springs may be quite vulnerable to the effects of regional aquifer drawdown. Depending on the geologic location of the spring, yield can range from 1 to 92 gpm. (NCRP, 1981).

1. Lower Tongue River Aquifer

The Lower Tongue River aquifer consists of the sandstone, siltstone, shale, coal and clinker beds from the base of the Robinson coal seam to the shale beneath the Knobloch coal seam. The aquifer is generally around 500 feet thick, except in the major stream valleys where erosion has reduced the total thickness to between 300 and 450 feet thick. Drill hole data indicates beds of permeable sandstone and shale are discontinuous and occur primarily as lenses grading from shale to siltstones.

Legend

Springs

Streams

4 2 0 4 8 12 Miles

N W E S

Source: Bureau of Indian Affairs - Geographic Data Service Center - Northern Cheyenne coverages

Figure 2

March 2002

Northern Cheyenne Reservation
Springs

Natural Resources Consulting Engineers, Inc.

Fort Collins, CO Berkeley, CA Eritrea, Asmara

NRCE

Several wells are known to be completed in the lower Tongue River aquifer. Most of these domestic wells were completed in sandstone and yield between 8 and 20 gpm. Wells in Muddy Cluster and Busby finished in the sandstone reportedly yield 18 and 50 gpm, respectively.

2. Upper Tongue River Aquifer

The Tongue River Member is Tertiary in age and crops out at the surface over much of the Reservation. The Upper Tongue River aquifer consists of the sandstone and clinker beds within the Knobloch, Wall and Anderson systems.

Knobloch System. This unit consists of sandstone, siltstone, shale, coal and clinker. The Knobloch system ranges from 0 to 366 feet in thickness. Depth to the top of the unit would generally be less than 1,100 feet depending on location on the Reservation. Many wells and springs obtain groundwater from this system. Yields of wells completed in the sandstone generally range between 8 and 10 gpm. Wells completed in the Knobloch clinker yield as much as 50 gpm. Springs associated with sandstone and coal outcrops of the Knobloch generally flow less than 3 gpm.

Wall System. The Wall system consists of sandstone, siltstone, shale, coal and clinker. It ranges in thickness from 0 to 790 feet. Beds of permeable sandstone are discontinuous and occur primarily as lenses between shale and siltstone layers. Depth to the top of the unit would generally be less than 300 feet depending on location on the Reservation. The Wall coal seam and its related clinker form the thickest most continuous unit of this system, ranging from 20-40 feet. The Canyon coal seam, within the Wall system, also forms a relatively thick and continuous unit (20 to 30 feet).

Several wells and springs derive water from the Wall system. Well yield ranges from 10 to 15 gpm. Springs flow from sandstone, siltstone and clinker units and vary from 1 to 25 gpm within the Reservation. (NRCP, 1981).

Anderson System. This system consists of fine sandstone, siltstone, shale, coal and clinker ranging in thickness from 0 to 300 feet. The Anderson coal seam and its related clinker deposits form the thickest single unit within this system. Thickness of the Anderson coal varies from 30 to 60 feet but thins to the west. Massive clinker related to the burning of the Anderson and small upper coal seams is reported to vary from 100 to 200 feet in the central and northern portions of the Reservation.

Several wells and springs are known to derive water from the Anderson aquifer system. No production data is available as all wells completed before 1977 were monitoring wells. Springs associated with

sandstone and siltstone units above the Anderson coal seam generally yield less than 1 gpm within the Reservation. (NRCP, 1981).

e. Valley Fill-Alluvium

Valley fill-alluvium is found underlying and bordering the principal drainages within the Reservation. These deposits include the Rosebud Creek, Muddy Creek, Lame Deer Creek and Tongue River alluvium.

i. Rosebud Creek Alluvium

The Rosebud Creek alluvium consists of clay, silt, sand, gravel and clinker fragments. Silts and clays are usually found as thin beds separating sand and gravel deposits. According to driller's logs, the Rosebud Creek alluvium ranges in thickness from 6 to 110 feet, with an average thickness of 52 feet.

An aquifer test performed in 1978 indicated an average transmissivity of 6243 ft^2/d for a saturated thickness of approximately 76 feet. This value is considered to be representative of the valley fill alluvium immediately adjacent to Rosebud Creek between the southern Reservation boundary and Busby. For wells completed in the Rosebud Creek alluvium, yield ranges between 6 and 20 gpm.

ii. Muddy Creek Alluvium

The Muddy Creek alluvium consists of a mixture of silt, sand, gravel, and clinker fragments. Based on driller's logs, the thickness of these deposits range from 0 to 112 feet and average 52 feet thick. The average saturated thickness is 30 feet. Assuming the deposits are similar to the Rosebud Creek alluvium, a transmissivity of 2,463 ft^2/d is calculated. Several wells known to be completed in the Muddy Creek alluvium yield between 10 and 15 gpm for domestic supply.

iii. Lame Deer Creek Alluvium

The Lame Deer Creek alluvium consists of silt, sand, and relatively thick gravel and clinker wash as compared to that of Rosebud and Muddy Creek deposits. Driller's logs indicate that the thickness of this deposit ranges from 12 to 63 feet. Domestic wells completed in the Lame Deer Creek alluvium yield between 6 and 15 gpm.

iv. Tongue River Alluvium

The Tongue River alluvium consists of sand and gravel-sized clinker fragments derived from the Tongue River member of the Fort Union formation. The thickness of this deposit ranges from 34 to 100 feet and averages 66 feet.

An aquifer test was performed near Ashland, Montana in October 1978. The results of that test indicated an average transmissivity of 14,532 ft^2/day for a saturated thickness of approximately 55 feet. Many wells on the Reservation are completed in the Tongue River alluvium. Wells yield between 50 and 400 gpm.

2. Water Quality

A thorough evaluation of groundwater quality was performed by the Northern Cheyenne Research Project from 1973 through 1977, and published by HKM in 1983. The following descriptions are based on the data collected during that study period. The majority of water quality data on the Reservation exists for the Fort Union and alluvial aquifers.

a. Fort Union Formation – Tongue River Member

Samples obtained from wells indicated water in these geologic units to be a mixed type with this dominant ions being sodium, magnesium, calcium, bicarbonate and sulfate. Total dissolved solids (TDS) concentration generally range from 232 to 3,774 mg/l in wells tapping sandstone, coal and clinker units. Water ranges from soft to very hard with calcium carbonate levels between 14 to 1,468 mg/l. Fluoride concentrations range from 0.1 to 9.1 mg/l and sulfate concentrations range from 0 to 2,119 mg/l. Adjusted SAR values for water samples obtained from the sandstone units of the Tongue River member of the Fort Union formation ranged from 0 to 53. Water samples from the coal beds of the Fort Union had adjusted SAR values ranging from 2.6 to 101.

Springs contained very hard water with calcium carbonate concentrations between 190 to 950 mg/l. Sulfate and fluoride concentrations ranged from 8.0 to 337 mg/l and 0.27 to 12.0 mg/l, respectively. The adjusted SAR ranged from 0.5 to 50.8.

Groundwater from sandstone and coal aquifers of the Tongue River member is generally suitable to serve as a drinking water source; however, several samples from wells obtaining water from the coals did exceed the Primary Drinking Water Standards for chromium and fluoride. Water from the Tongue River aquifers is generally quite mineralized and not aesthetically pleasing. This water is generally undesirable for irrigation due to salinity problems; however, it is acceptable for livestock use.

b. Valley Fill - Alluvium

Water-quality for the valley fill-alluvium on the Reservation appears to be a mixed-type, with the dominant ions being calcium, magnesium, sodium, bicarbonate and sulfate. A range of water-quality values in the alluvial systems is presented in Table 6-10.

Table 6-10 – Water-Quality of the Alluvium on the Northern Cheyenne Reservation

Constituent	Rosebud Creek	Muddy Creek	Lame Deer Creek	Tongue River
TDS (mg/l)	374 – 2048	1082 - 1574	558 - 1144	527 - 3277
$CaCO_3$ (mg/l)	140 – 1225	664 - 955	450 - 626	35 - 946
Sulfate (mg/l)	67 – 1370	313 - 731	119 - 361	0 – 1893
Nitrate (mg/l)	0 - 4.0	0 - 1.0	1.0 – 4.3	0.1 - 6.2
Fluoride (mg/l)	0 - 1.3	0.5 - 1.5	0.8 - 2.0	0.3 - 6.4
Adjusted SAR	0 – 34	5.2 - 6.0	5.2 – 6.0	4.3 - 51
No. wells tested	17	5 samples	4	12

Data published in HKM (1983) from NCRP data collected from 1973-1977.

Groundwater from the alluvium is generally suitable for drinking water with respect to the Primary Drinking Water Standards, although several samples taken from wells completed in the alluvium of Rosebud, Muddy, Lame Deer Creeks and the Tongue River, equaled or exceeded the Primary Standards for cadmium. (HKM, 1983). One sample from a well completed in the Rosebud Creek alluvium exceeded the limits for chromium and lead. (HKM, 1983).

The alluvial groundwater is quite mineralized with concentrations of TDS, sulfate, iron and manganese that often exceed Secondary Drinking Water Standards. Exceeding secondary standards does not represent a health hazard, but rather makes the water less desirable as a drinking water source for aesthetic reasons.

The alluvial groundwater would probably be suitable for irrigation provided tolerant crops were used and special irrigation practices were instituted to prevent salinity and permeability problems. (HKM, 1983). The water is acceptable for livestock use.

3. Groundwater Movement.

A great majority of data existing on the Reservation is from the shallow alluvial groundwater system. Although deeper, better quality water may exist on the Reservation, money is generally not available to explore these potential resources representing a real vulnerability of the Tribe when it comes to obtaining good quality and reliable drinking water.

According to Slagle (1985), two general flow patterns are present in the northern Powder River Basin. An upper flow pattern, controlled by topography, occurs in aquifers at depths of less than about 200 feet. A lower flow pattern, characterized by regional flow generally northward toward the Yellowstone River and significant flow toward the Powder and Tongue Rivers, is present in aquifers at depths of more than about 200 feet.

a. Deep Groundwater System

Very little data exists within the deep groundwater system to determine flow direction on the Reservation. The USGS prepared a potentiometric surface map of the Madison Group showing recharge in the Bighorn Mountains and groundwater movement from the southwest to the northeast and north passing beneath the Reservation. (NCRP, 1981).

b. Shallow Groundwater System

Potentiometric surface maps (Hopkins, 1973; NCRP, 1981; Slagle, 1985) of the shallow groundwater system within the Reservation show that lithology, topography and the two major drainages (Tongue River and Rosebud Creek) appear to influence the movement of shallow groundwater within the Reservation. Groundwater generally moves to the west and northwest to Rosebud Creek and southeast to east to the Tongue River from the highlands of the central Reservation. Along the western edge of the Reservation, groundwater flows generally east from the Wolf and Rosebud Mountains and southeast from the Little Wolf Mountains to Rosebud Creek.

Water is recharged to the shallow system in high plateau areas and to outcrops of clinker, sandstone, and alluvium by direct precipitation and water discharges to the major streams. (NCRP, 1981). Underlying aquifers are sometimes recharged by the downward leakage of the upper aquifer systems.

Thick continuous coal seams of the Fort Union Formation transmit water laterally toward outcrop areas. Outcrop areas of aquifers in the central potion of the Reservation are usually discharge points if sufficient water is available. (NCRP, 1981).

4. Quantity of Groundwater

The saturated thickness, specific yield, and areal extent of an aquifer are used to determine the quantity of groundwater in storage. With the available data on the Reservation, groundwater storage was only calculated for the alluvial aquifer systems. The total available groundwater in storage within the alluvial sediments of the Reservation is approximately 115,500 acre-feet. (Table 6-11).

Table 6-11 – Volume of Water Stored in Alluvial Aquifer Systems on the Reservation

Alluvial System	Avg. Thickness (ft)	Specific Yield	Area (acres)	Volume (acre-ft)
Rosebud	43	0.12	11,224	57,900
Muddy	30	0.12	1,374	4,900
Lame Deer	35	0.12	1,828	7,700
Tongue	36	0.15	8,337	45,000
			Total	**115,500**

Data obtained from HKM (1983)

5. Cultural Significance of Groundwater.

As discussed in more detail in Chapter 7, The Northern Cheyenne people believe that all things in the universe have spirits, including groundwater and associated springs. The Northern Cheyenne recognize the spiritual qualities of groundwater. There are special prayers for digging wells. Groundwater represents the quiet nature of the earth, and it should not be disturbed. Springs are the homes of the spirits. Offerings are commonly left at springs today. (BLM, 1989).

C. Water Rights.

The water rights of the Northern Cheyenne Tribe are set forth in the Northern Cheyenne-Montana Compact, which represents a statement of the federally reserved water right held by the Tribe. The Reserved Water Rights Compact Commission (RWRCC) of Montana describes Federal Reserved Water Rights as follows:

1. Federal Reserved Water Right.

A federal reserved water right is a right to water that was created when Congress or the President of the United States reserved land out of public domain. The U.S. Supreme Court has ruled that enough water be reserved to meet the purposes for which the reserved lands were designated. The date that the land was withdrawn and the reservation created is the priority date of a federal reserved water right. Reserved water rights for Indian reservations, for instance, go back to the 1800s. Federal reserved water rights do not have the same restrictions placed on them as on state appropriative water right. For example, a notice of appropriation or beneficial use is not required to maintain a federal reserved right, and it is not lost due to non-use.

The Tribe's reserved water right addresses three sources of water, the Tongue River, the Bighorn River and Rosebud Creek. The Compact entitles the Tribe to a priority date of October 1, 1884. This right provides for:

- The diversion of 1,800 acre-feet per year, or the amount necessary to irrigate 600 acres, from Rosebud Creek.

- The diversion of 30,000 acre-feet per year from the Bighorn Lake at Yellowtail Dam for any beneficial use.

- The diversion of 32,500 acre-feet from the Tongue River for any beneficial use.

- An additional 19,530 acre-feet from Rosebud Creek, for any beneficial use subject to the constraint that diversion and use do not adversely affect other water right holders of priority June 30, 1973 and earlier.

- The extraction of alluvial groundwater by means of wells of less than 100 gallon per minute pumping capacity, exclusive of other water rights.

2. History of Compact

The USBR provides a good summary of the history of water rights with regard to the Northern Cheyenne. It is restated here from the Tongue River Basin Project Final Environmental Impact Statement, March 1996.

> In 1913, the state court of Montana initiated a proceeding to adjudicate water rights on Tongue River. In this proceeding, the federal government did not fully satisfy the Northern Cheyenne Tribe's water Winters rights claims to water in the Tongue River. Instead, the United States asserted a claim on behalf of the Tribe only for the amount of water used by the Tribe at that time. In the Miles City Decree of 1914 (the Decree), the Tribe was awarded only 30 cubic feet per second (cfs) of water out of an available 425 cfs. The Decree established a priority date of 1909 for the Northern Cheyenne water claim: the next to last priority awarded in the Decree. The Tribe's water right as set forth in the Decree was insufficient to irrigate the Tribe's agricultural lands at the time and the late priority date established a high probability that the Tribe would be out of water before the irrigation season began.
>
> The Tribe has asserted that the failure to pursue the Tribe's Winters rights claims constituted a breach of the federal trust responsibility. In 1975, the Tribe filed an action in U.S. District Court to determine its water rights. The Untied States also filed suit on behalf of the Tribe. In 1979, the State of Montana initiated proceedings for a general stream adjudication, which included the claims of the Tribe. In that same year, the estate established the Montana Reserved Water Rights Compact Commission to negotiate a water rights settlement with the tribes of Montana. Negotiations with the Tribe began in 1980. Several years of negotiations yielded the Northern Cheyenne-Montana Water Rights Compact (the Compact). The Tribe formally approved the Compact on May 20, 1991 with Tribal Resolution #144. The Compact was ratified by the Montana State Legislature on June 11, 1991, and was re-ratified on December 16, 1993 by the 53rd Legislature Special Session.

On September 30, 1992, the federal government ratified the Compact via "The Northern Cheyenne Indian Reserved Water Rights Settlement Act of 1992" (Pub.L. 102-374, 106 Stat. 1186) (Settlement Act). The purposes of the Settlement Act of 1992 are:

> To achieve a fair, equitable, and final settlement of all claims to Federal reserved water rights in the State of Montana of the Northern Cheyenne Tribe and its members and allottees and the United States on behalf of the Northern Cheyenne Tribe and its members and allottees. To approve, ratify and confirm the Water Rights Compact entered into by the Northern Cheyenne Tribe and the State of Montana on June 11, 1991. To direct the Secretary of the Interior to enter into a cooperative agreement with the State

of Montana for the planning, environmental compliance, design, and construction of the Tongue River Dam Project (P.L. 102-374, 106 Stat, 1186, Section 3(8)) in order to: implement the Compact's settlement of the Tribe's reserved water rights claims in the Tongue River Basin, protect existing Tribal contract water rights in the Tongue River Basin: provide [up to as per the Compact] 20,000 acre-feet per year of additional storage water for allocation to the Tribe, and allow the State to implement its responsibilities to correct identified Tongue River Dam safety inadequacies. To provide for the conservation and development of fish and wildlife resources in the Tongue River Basin. To provide for the enhancement of fish and wildlife habitat in the Tongue River Basin. To authorize certain modifications to the purposes and operation of the Bighorn Reservoir in order to implement the Compact's settlement of the Tribe's reserved water rights claims. To authorize the Secretary of the Interior to take such other actions as are necessary to implement the Compact.

3. Northern Cheyenne Water Code

As a result of the above process, the Tribe is now in a position to meaningfully undertake development of their resources and has set forth and adopted water management policies and procedures. These have been formalized in the Northern Cheyenne Water Code (Amended Dec 18, 2000).

D. Tribal Water Policy and Management

1. Northern Cheyenne Water Code

The Northern Cheyenne Water Code sets the regulatory framework for the management of Tribal water resources on the Reservation. The purpose of the Water Code is to preserve and protect the quantity and quality of Tribal water resources through wise use, administration, management, and enforcement. This includes, but is not limited to, permitting and prioritizing tribal water use, long-term planning to ensure the sustainability of resources, encouraging conservation practices, and protecting traditional, religious and cultural uses of water.

a. Tribal Water Resources Board and Administrator

The administration of the Water Code will be the responsibility of a Tribal Water Administrator (TWA) and a Tribal Water Resources Board (Water Board). The Tribal Water Board is responsible for adopting new rules and regulations, approving or disapproving permits, reporting to the Tribal Council on relevant water-related issues, declaring critical management areas and water supply conditions, establishing and maintaining a technical staff to administer and enforce the Code, and developing recommendations for long-term funding sources to support tribal water management.

The Tribal Water Administrator (TWA) issues citations and initiates enforcement proceedings for violations of the Code. The TWA administers water rights, monitors and enforces water use through inspections, responds to emergency situations, collects data and researches development possibilities, and conducts educational programs. Recommendations are made to the Water Board on critical management areas and methods for improving water use and efficiency. The TWA develops and submits an annual budget and report to the Water Board.

b. Water Management

The Water Code sets forth the primary physical, hydrologic and engineering principles guiding the management of surface and groundwater resources on the Reservation. These procedures are required to effectively manage, fully utilize and protect the water rights of the Northern Cheyenne Tribe, and to assure compliance with applicable laws and requirements of the Northern Cheyenne Montana Compact of 1991 and the Northern Cheyenne Water Rights Settlement Act of 1992.

The Water Board will adopt a Comprehensive Water Management Plan at least every five years to guide water resource decisions, permitting and management. Surface water and groundwater is evaluated, and no later than March 1 of each year, the condition of these resources is declared. Water allocation procedures for both surface and groundwater are outlined in this section for use during drought conditions.

c. Permitting

A water permit is required to divert or undertake any activity affecting or involving tribal water. This includes water diversions, discharge, injection, transfers, surface water alterations, groundwater recharge, storage impoundments, or hydropower generation. The Code clearly identifies the application process outlining the procedures, hearings, and resolution of water disputes. The Water Board will preside over all hearings. The Tribal Court will enforce subpoenas issued by the Water Board.

d. Enforcement

Prohibited acts and penalties are clearly outlined in the Water Code. Any person who commits prohibited acts shall be subject to civil proceedings before the Water Board on citation by the Tribal Water Administrator. All decisions of the Water Board shall be appealable directly and exclusively to the Tribal Courts.

e. Summary

The Northern Cheyenne Water Code contains the provisions and guidelines to effectively manage the water resources of the Reservation, however, with the fairly recent approval of the Water Code, the Tribal Water Resources Board has not yet been established. Currently, no permitting process or accounting for water resources exists on the Reservation. Once underway, the Water Code will empower the Tribe by enabling them to control and protect the water resources on the Reservation.

2. Northern Cheyenne Tribe Draft Surface Water Quality Standards.

a. Introduction

A water quality standard defines the water quality goals for a water body, or portion thereof, by designating the use or uses to be made of the water, by setting criteria necessary to protect the uses, and by protecting water quality through antidegradation provisions. The Tribe is in the process of adopting these standards to protect public health and welfare, enhance the quality of water and serve the purposes of the Federal Clean Water Act._

Currently, the Northern Cheyenne Tribe's Draft Surface Water Quality Standards have been submitted to the EPA and the public review process is near completion. In addition, the Tribe's application under Section 518 of the Clean Water Act for Treatment as a State for the purposes of implementing the Clean Water Act's water quality standards program is still pending before the EPA. The Tribe's Treatment as a State application and water quality standards are vital in the Tribe's water quality protection program and aid in evaluating potential impacts on water quality from a broad range of causes and sources. A primary purpose of the water quality standards is to guide efforts to monitor and assess surface water quality within the Reservation. Any regulatory pollution controls established by the Tribe or the Federal Government must be developed to ensure a level of water quality that will satisfy these water quality standards.

Surface water quality standards are adopted to establish maximum allowable levels or concentrations of pollutants and provide a basis for protecting water quality that is presently better than standards required for surface water quality. They serve to establish a basis for limiting the introduction of pollutants, which could affect existing or designated uses of Reservation surface waters. The following surface water characteristics and policies are described in the Draft Water Quality Standards:

b. Beneficial Uses

Beneficial use classifications are designated to all surface waters of the Reservation in order to achieve national "fishable and swimmable" goals. Narrative water quality criteria and sampling methods are described along with the Tribe's biological and radiological surface water standards.

c. Antidegradation Policy

The Tribe's antidegradation policy is consistent with the federal antidegradation policy found in EPA's water quality standards regulation. The purpose of the policy is to protect existing water quality where the quality of the water is better than required to support the designated uses.

d. Mixing Zone and Dilution Policy

The mixing zone and dilution policy describes how dilution and mixing of point source discharges within receiving waters will be addressed in developing discharge limitations for point source discharges. Compliance requirements and 401 Certification procedures are also described. The requirements for standards implementation are outlined

Once approved and adopted by EPA, the Tribe's standards program will have the same legal standing as those adopted by states. The federal government will be responsible for the enforcement of the standards. EPA Region VIII will have the responsibility of enforcing requirements applicable to point source discharges, including those permit requirements that are based on the Tribe's water quality standards.

e. SAR and EC

The Tribe is especially concerned about salinity and its impacts on riparian areas and irrigated lands. The Tribe has developed numeric criteria for the Sodium Adsorption Ratio (SAR) and Electrical Conductivity (EC) of waters of the Reservation to address these concerns. The proposed numeric standards for EC and SAR are presented in Table 6-12.

The rationale behind the numeric criteria for SAR is based on James Bauder's final report, *Recommended in-stream standards, thresholds and criteria for irrigation or water spreading to soils of alluvial channels, ephemeral streams, flood plains, and potentially irrigable parcels of land within the boundaries of the Northern Cheyenne Reservation*. (2001).

Table 6-12. Revised Numeric Standards for EC and SAR and Indicator Values for TDS Applicable to the Mainstems of the Tongue River and Rosebud Creek and their Tributaries

(In response and consideration of comments, concerns, objections received from various parties, the following modifications have been incorporated into the proposed surface water standards for EC and SAR of the Northern Cheyenne Reservation.)

	Electrical[1] Conductivity (EC) dS/m	Sodium[2] Adsorption Ratio (SAR)	Total[3] Dissolved Solids (TDS) mg/L
Southern Boundary			
Irrigation period average[4]	1.0	--	660
Non-irrigation period average[5]	2.0	2.0	1320
Northern Boundary			
Irrigation period average	1.5	--	990
Non-irrigation period average	2.0	3.0	1320
Tributaries			
Irrigation period average	1.5	--	990
Non-irrigation period average	2.0	3.0	1320

1 The EC values are numerical water quality standards. EC is an expression of salinity as electrical conductance reported in deciSiemens per meter at 25 degrees C (dS/m) or in units of millimhos per centimeter (mmho/cm).

2 The SAR values are numerical water quality standards. Sodium adsorption ratio (SAR) is an expression of the concentration of sodium relative to the sum of concentrations of calcium and magnesium in water.

3 The TDS values are indicator values and are not water quality standards. TDS is an expression of salinity as total dissolved solids in mg/L. The TDS values will be used to monitor conditions and trends in Tribal waters. If a TDS indicator value is exceeded, the Tribe will evaluate the cause and, where appropriate, make necessary adjustments to the EC water quality standard(s). Any change to the EC standard will be made through the Tribe's water quality standards-setting process.

4 An "irrigation period average" is a 30-day average applicable during the period of active irrigation or water spreading, defined by the Tribe as April 1st through November 15th annually.

5 A "non-irrigation period average" is a 30-day average applicable during the non-irrigation season, November 16th - March 31st annually.

The EPA does not currently have any numeric criteria for these pollutants because the level tolerated by soils varies greatly based upon soil type. The State of Montana is currently developing numeric criteria for these constituents. The adoption of numeric criteria for SAR and EC will greatly assist agencies issuing permits to protect the Tribe's resources.

III. Uses of Tribal Water Resources.

Historically, the use of Tribal water resources has been limited to uses typical of small communities within southeastern Montana. These being relatively small amounts of water required for common and practical water uses associated with community/domestic and municipal requirements, stock watering, limited irrigation and forestry related uses such as those relating forest and range fire fighting and a small amount associated with the Tribally owned saw mill. Much of this water is derived from wells and springs; however, some diversion of water from the Tongue River and Rosebud Creek is undertaken for irrigation of lands along those stream courses. Development and use of water in the past have been restricted due to unsettled water rights and the limited economic capability of the Tribe to develop resources in general.

Because of the settlement of water rights and ratification of the Compact, it is expected that future use of Tribal water resources will likely accelerate. The Bureau of Reclamation (1997) stated that "The increased water proved by the [Tongue River] project is a result of negotiations between the Tribe and the State of Montana. According to provisions of the Settlement Act, the Tribe, State of Montana, federal government, U.S. Congress and the President of the United States agreed formally that the tribe is free to use its Compact water for any purpose it chooses. Furthermore, the Tribe is free to change its use of Compact water as it wishes and at any time. The Tribe has identified its present and reasonably foreseeable use of Compact water as fish, wildlife, and recreation purposes in the reservoir and downstream."

A. Agriculture.

The unrealized potential for irrigation development on the Reservation was a central point in the quantification and justification of Tribal water claims. Among the future uses of water available to the Tribe, irrigation may have the greatest potential demand.

1. Agricultural Land.

The Northern Cheyenne inhabited lands surrounding the Powder River Basin along with the Sioux and Crow Indians prior to 1860. (Weist, 1977). Land within the Tongue River Basin began to be settled by non-Indians after the establishment of Fort Custer and Fort Keogh in 1877. It was not until the arrival of the Union Pacific Railroad, in 1882, that significant tillage based agriculture became practiced in the region, most of which was dryland farming. (Northern Cheyenne Agency, 1964)

a. Historical Irrigation

The U.S. Bureau of Reclamation surveyed the Tongue River Basin and produced a report on the development potential of the Tongue River for irrigation and power production. Construction began on the Tongue River Irrigation Project in 1907. Early

irrigation development on the Reservation consisted of the Birney Project, which planned for 6,000 to 7,000 acres of land to be irrigated by means of the Birney Canal. However, only 1,200 acres were potentially serviceable, due to difficult construction and inadequate water. Only about 6.8 miles of the original 25-mile canal were constructed and irrigating about 600 acres of land.

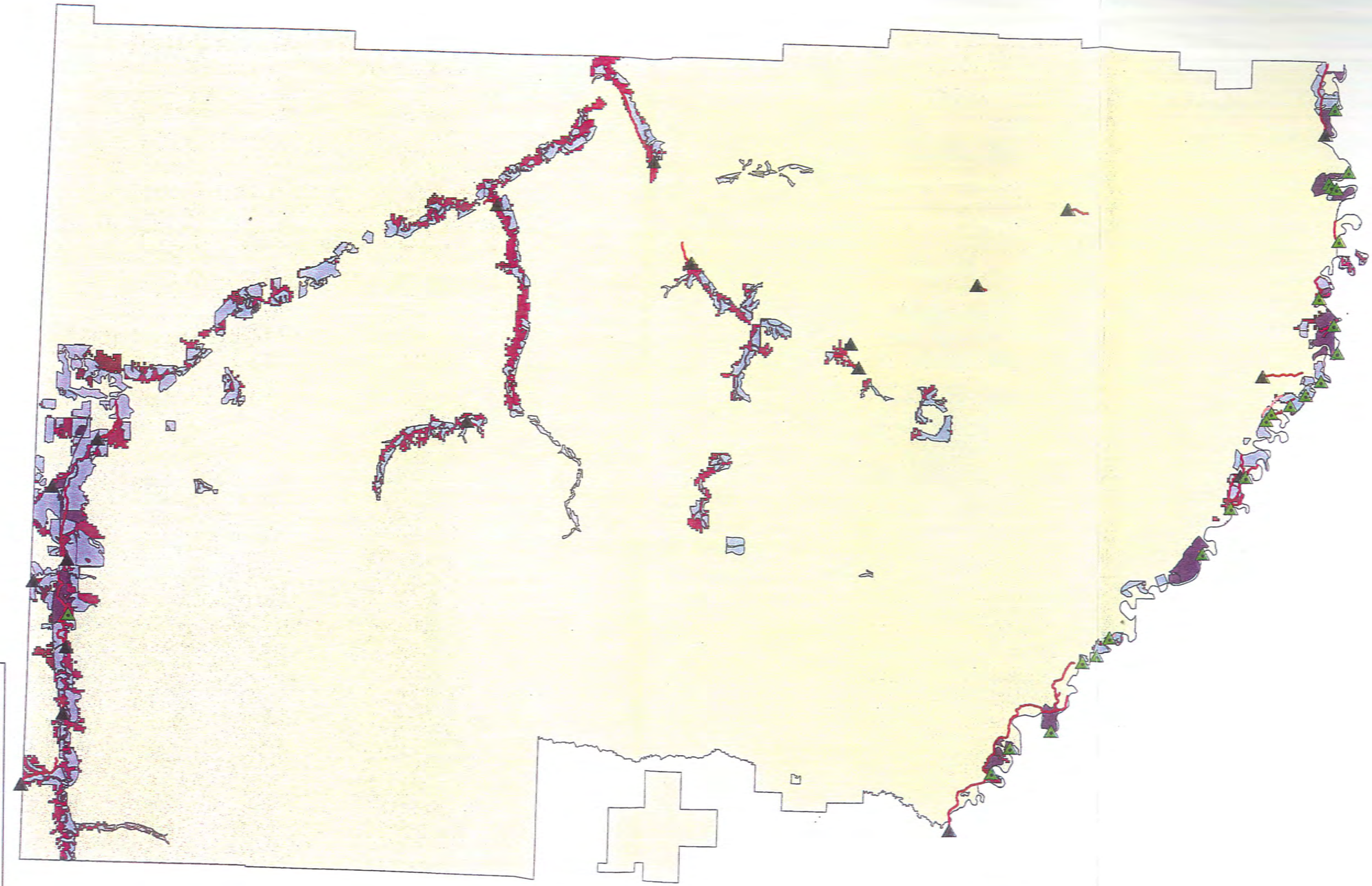
The project was later modified to serve 1,380 acres of land. Tongue River water was provided by 14 pumping units, which were developed to various levels of completion. (Allen, 1947; HKM, 1976) The 14 Indian irrigation units along the west side of the Tongue River were originally referred to as:

- Birney Diversion Unit
- Cook Creek Pump Unit
- MedicineTop Pump Unit
- Standing Elk Pump Unit
- Pawnee Pump Unit
- Teepee Pump Unit
- Bighead Pump Unit
- Twofeather Pump Unit
- Tooey Pump Unit
- Logging Creek Pump Unit
- Little Coyote Pump Unit
- Ashland Pump Unit
- Shoulderblade Pump Unit
- Reservation Creek Pump Unit

The economy of the region was primarily based on cattle production; therefore, the predominant agricultural crops included hay, such as grass and alfalfa hay, and alfalfa seed and corn for silage and grain. Among the hay producing areas, some lands were sub-irrigated by means of taking advantage of naturally wet areas, and areas or which became wet as a consequence of the irrigation of other lands. Other lands along the Rosebud and Tongue River drainages were irrigated by surface water runoff concentrations and were often referred to as sub-irrigated lands. Historically there were a number of small diversions along Rosebud Creek, such as the Government Ditch near Busby, which had the capacity of about 200 acres. (HKM, 1976).

b. Present Irrigation

Of the Reservation's 444,524 acres, 391,852 acres are considered rangeland, 11,799 are dryfarmed and 1,794 acres are irrigated. (Northern Cheyenne Tribe, 1989). Figure 6-3 shows locations of historical and presently existing irrigation systems. The soils of the Reservation were surveyed and mapped in 1975 as a conjunctive effort made by the Tribe, Bureau of Indian Affairs, the Rosebud and Bighorn County Conservation Districts and the Soil Conservation Service. This soil survey provides information regarding the types and locations of soils located on the Reservation. (Northern Cheyenne Tribe, 1976).



Legend

Irrigation Type
- GRAVITY
- PUMP

Irrigation Type
- DITCH
- HIST DITCH
- PIPE

BIA Farm Coverage
- DRY
- HILL
- IRR

GAP Study Coverage
- Agriculture - Dry
- Agriculture - Irrig
- Reservation

6 4 2 0 4 8 12 Miles

N W E S

Source: Bureau of Indian Affairs - Geographic Data Service Center - Northern Cheyene coverages
University of Montana - Wildlife Spatial Analysis Lab - Gap Analysis Project 90-meter Land Cover pixels

Figure 3

March 2002

Northern Cheyenne Reservation Farmland

Natural Resources Consulting Engineers, Inc.
Fort Collins, CO Berkeley, CA Eritrea, Asmara

NRCE

c. Potential Irrigation

Numerous studies have been conducted for purposes of defining irrigation potential of the Reservation. An economic study of irrigation potential on the Reservation provides estimated returns of irrigated and subirrigated agriculture for 4,770 and 3,110 acres of land located within the Tongue River and Rosebud Creek drainages respectively. This study was based on cultivation of alfalfa, alfalfa seed, malting barely, feed barley, spring wheat, and corn silage. The results of this study demonstrated economic feasibility. (Dornbusch, 1984).

In 1976, a land classification study was undertaken by HKM Associates for the purpose of determining the potential of Reservation lands suitable for irrigated agriculture. This semi-detailed classification identified about 62,000 acres of arable land within the Reservation, of which 21,160 acres were identified as irrigable by means of gravity or sprinkler systems. At that time, the study identified 1,240 acres of land as presently irrigated with the remaining 19,920 acres of land is comprised of 2,320 acres of Class 1 land, 5,820 acres of Class 2 land, 8,220 acres of Class 3 land, and 3,560 acres of Class 4 land.

Various estimates of crop water requirements were determined. One analysis, using the SCS Modified Blaney-Criddle method and the SCS effective rainfall method determined seasonal, net irrigation requirements for the Tongue River Drainage, to be 20.36, 11.94 and 14.74 inches of water seasonally, for alfalfa, small grain and corn respectively. Seasonal, net irrigation water requirements for the Rosebud drainage were 19.03 inches per acre for alfalfa and 10.73 inches per acre for small grain. The total project acreage and project water demand identified in this study were 10,710 acres and 24,975 acre-feet of water annually. (Stetson, 1983).

Subsequent to the common use of the SCS Modified Blaney-Criddle method, it has been shown that this method tends to underestimate evapotranspiration by about 10%, when compared to lysimeter measurements made at Kimberly, Idaho. (American Society of Civil Engineers, 1990). Therefore, evapotranspiration and the net irrigation requirement and project diversion requirements for the Reservation are likely higher, for the same cropping patterns.

A more recent irrigation development study was conducted by MSE-HKM Engineering (1995). This study looked at specific areas in the Rosebud Creek and Tongue River drainages in detail for purposes of exploring the expansion of existing farmed areas for the benefit of the Tribe. Preliminary designs and costs were generated for select irrigation units located at Busby, Muddy Creek, Lame Deer, and Teepee Farms. This study indicates that:

> A long range plan for the Northern Cheyenne Indian Reservation could incorporate an extensive irrigation system approaching 10,000 acres depending on available water supplies. However, project water demands were not specified.

Water from the Tongue River on the eastern side of the reservation could be used to supply a series of center pivots, big gun, and side roll systems. A series of wells along Rosebud Creek could serve various irrigation systems in those areas. Irrigation in the central portion of the reservation is also a possibility to be investigated. Mobile irrigation systems may be implemented where topography and field shape are appropriate as these systems are economical, efficient, and require less operation and maintenance than manually moved irrigation systems. (MSE-HKM, 1995)

2. Non-Irrigation Agricultural Water Use.

Apart from irrigation, agricultural water uses are relatively modest. Stock water use is probably the most notable non-irrigation, agricultural demand. In the future, it is possible that similar water demands may arise for such purposes as aquaculture.

A summary of stock water use includes the water consumed by stock as well as losses associated with the process of stock watering. These are mostly evaporation and seepage from stock ponds. Dornbusch & Company performed a review of stock water use requirements for the Northern Cheyenne Reservation in 1984. The summary was based on an average annual Reservation rate of 9,678 animal units and 12 gallons per day per head. The report concluded that 130 acre-feet of water would be consumed, 359 acre-feet would evaporate and 497 acre-feet would be lost due to seepage from ponds. The total amount of water related to stock use was therefore 986 acre-feet per year. (Dornbusch, 1984).

B. Non-Agricultural Water Use.

1. Domestic Water.

Groundwater resources provide the majority of the domestic water supply for the Reservation. Most reservation residents rely on groundwater of poor quality and often-insufficient quantity for their needs.

a. Community Water Systems

Each of the five Reservation communities is served by community wells and water storage systems. The water is pumped into storage tanks and gravity-fed to residents connected to the system's water lines. (Little Coyote, 2001). Information regarding the five community water systems was obtained from the Northern Cheyenne Utilities Manager. (Scalpcane, 2002). Further information about community water systems is contained in Chapter 5, Part II.A. The Tribe is currently searching for information about which aquifers the community wells are completed in.

1. Lame Deer Community Water System

Five wells serve those connected to the Lame Deer Community Water System. The average well depth is 88 feet below ground surface (b.S.). Wells #1 and #2 are located in Pumphouse A and yield 190 gallons per minute (gpm). Well #3 is located in Pumphouse B and yields 95 gpm. Pumphouse C contains well #4 which yields 95 gpm and Pumphouse D contains well #5. Well #5 yields 230 gpm and is treated with chlorine. Water is pumped continuously and stored in two 200,000 gallon elevated storage tanks and one 326,000 gallon underground storage tank and distributed to approximately 770 service connections (1995). There are 280 fire hydrants connected to the Lame Deer System. Often times the water pressure is not adequate in the summer months to provide fire protection.

2. Busby Community Water System

Five wells have been drilled to serve the Busby community; however, three of these wells are not in use due to elevated TDS concentrations. The two wells in operation are 260 and 280 feet deep and yield 50 gpm each. Water is contained in five 20,000-gallon underground storage tanks and serves 116 connections (1998). The water in Busby is treated with a water softener and a venturi fluoridation unit.

3. Ashland Community Water System

The Ashland Community Water System is served by one well, which is 110 feet deep and yields 51 gpm. Water is stored in a 15,000-gallon and a 35,000-gallon storage tank and distributed to approximately 38 service connections (1998). The Ashland Community Water System contains a Reverse Osmosis Treatment Plant to remove sulfate, iron and manganese from the water.

4. Birney Community Water System

Three wells have been drilled to serve the Birney community; however, only one of these wells is in use. The well in use is approximately 80 feet deep and yields 32 gpm. Water is stored in two 20,000-gallon underground storage tanks. The water use has been estimated to be about 60 gallons per day and there are 25 connections to the system (1998). A Reverse Osmosis Treatment Plant is used to treat the water.

5. Muddy Cluster Community Water System

Four wells have been drilled; however only one well is in use. Three of the four wells are not used due to high unspecified secondary contaminant levels. Water is contained in one 48,000-gallon storage tank and two 30,000 underground storage tanks. A Reverse Osmosis Water Treatment Plant is used to remove sulfate, iron and manganese from the water.

b. Individual Water Supply

Those residential homes not connected to a one of the district water systems contain an individual domestic supply well. The IHS provides well drilling and septic tank installation free for Native Americans on the Reservation. (BLM, 1989). Non-Native Americans on the Reservation fall under the jurisdiction of the county health departments. (BLM, 1989). Eighty percent of the wells for homes off Highway 212 produce water which does not meet Federal Secondary Drinking Water Standards. (BOR, 1995).

c. Domestic Water Use

Combined residential water use is estimated to be 130 gallons per capita per day (gpcpd). (BOR, 1995). With an on-Reservation population of approximately 4,470 people (2000 Census), the average day domestic water use is 0.581 million gallons per day. (MGD).

2. Commercial.

The town center of Lame Deer contains a majority of the commercial development on the Reservation. The central district is composed of the Tribal headquarters, supermarket, convenience store and gas station, car care service, café, church, telephone exchange, bank, and several small businesses. (Little Coyote, 2001). Nearby are Dull Knife Memorial College, the elementary school, Tribal Health Service, Indian Health Service, Bureau of Indian Affairs, the Charging Horse Casino and various Tribal facilities. It is a concern that existing water and sewer services prevent further commercial development in the future.

Commercial water use is estimated to be 35 gpcpd. (BOR, 1995). Assuming that the commercial development on the Reservation has not changed dramatically since 1994, the average day water use is estimated to be 0.1565 MGD.

3. Municipal

Municipal water use describes water use in public areas, community areas and government buildings. Municipal water use is estimated to be 9 gpcpd. (BOR, 1995). Using this figure, the average day water use is calculated to be 0.0402 MGD.

4. Industrial

Currently, no industrial development is occurring on the Reservation. Potential industrial operations include the saw mill and development of coal related resources. These potential uses are not accounted for in the current water use.

a. Saw Mill

The Tribe's Tongue River Lumber Company (TRLC) saw mill is temporarily shut down as of March 2001 for financial reasons. (Little Coyote, 2001). The average water use during operation is not known.

b. Development of Coal and Other Energy Resources

The Reservation possesses substantial coal resources and potentially significant amounts of oil and gas resources. Studies pertaining to the development potential of these resources on the Reservation have been done. Table 6-20 describes industrial water use associated with resource development if it should ever occur on the Northern Cheyenne Indian Reservation.

5. Non-Agricultural Water Use Summary.

The daily per capita water use on the Reservation was estimated by the BOR for 1994 to be 189 gpcpd. This is distributed between residential water use, commercial water use, municipal water use and unaccounted-for losses. (BOR, 1995). The combined average non-agricultural water use is estimated to be 0.8449 MGD (954 acre-feet/yr) on the Reservation. This accounts for losses in the system due to line leakage and meter slippage (0.0671 MGD).

Average use does not account for daily fluctuations in water use. Peaking factors are used to compute the maximum ~~pay~~day and the maximum momentary water use rates, based on average day use. A peaking factor of 2.75 was used (BOR, 1995) to yield a peak day water use of approximately 2.323 MGD (2,580 acre-feet/yr).

C. Water Marketing.

Water marketing does not mean the permanent sale of water, but rather it represents the contracting of water for fixed periods of time without the relinquishing of any water right held by the offeror. Water marketing of Reservation water by the Tribe is a source of great potential benefit. The Tribe has large water resources at its disposal by virtue of its early priority and federally reserved water right. Specific quantities of water associated with the Tribe's right are designated for any beneficial use, water that can very well be used for purposes off the Reservation.

1. Sources of Water

Possible sources of water that the Tribe may elect to market are:

- The diversion of 30,000 acre-feet per year from the Bighorn Lake at Yellowtail Dam for any beneficial use.

- The diversion of 32,500 acre-feet from the Tongue River for any beneficial use.

- An additional 19,530 acre-feet from Rosebud Creek, for any beneficial use subject to the constraint that diversion and use do not adversely affect other water right holders of priority June 30, 1973 and earlier.

2. Markets and Demand.

Water marketing generally follows from a business arrangement between the party seeking to sell water to others who agree on the amount of water, type of use, time of use, duration of contract and other considerations. Some of these considerations included the environmental conditions and issues regarding navigation, flood control and channel capacity. This varies depending on many factors related to the potential market area boundary, which is a function of source location, point(s) of diversion, method and path of conveyance and location and type of use. Definitions of beneficial use also vary and may affect the development of a particular water market.

Possible markets for Northern Cheyenne water include power production, mining and energy related consumption. The market boundary for such uses could vary from local to regional extent because of the existence of coal throughout the Powder River basins. Other future potential markets could include municipal, irrigation and other industrial uses. A summary of anticipated industrial water use is shown in Table 6-13, which is adapted from a table appearing in a draft report entitled Northern Cheyenne, Feasibility of Developing Coal Resources. (Dornbusch, 1984).

Table 6-13 – Anticipated Industrial Water Use

Type of Development	Unit Size	Consumption (acre-feet/yr)
Coal Mine	10 million tons/year	640-1,050
Coal Fired Power Plant	500 Mega Watt	8,300
Coal Liquefaction	50,000 barrels per day	14,500
Coal Gasification	250 mmscft	9,100
Coal Slurry Pipeline	10 million tons/year	6,000

Dornbusch, 1984

IV. Air Resources.

A. History

In the 1970's, two 750 MW coal-fired power plants were being planned in Colstrip, Montana, about 13 miles from the northern boundary of the Reservation. The Tribe, concerned about the resulting air pollution, took action that changed the legal standard. On August 5, 1977, the Northern Cheyenne Tribe became the first government in the Nation – federal, state, local or tribal - to voluntarily raise the air quality standard to the most pristine standard under law, Class I. This classification resulted in the installation of the most stringent air pollution control technology available in the Colstrip power plants.

The rest of the Tongue River Basin is classified as Class II under the federal Prevention of Significant Deterioration (PSD) regulations, allowing for moderate air quality deterioration. The Class I designation on the Northern Cheyenne Reservation restricts increases in ambient air pollutant levels to a much smaller increment than the Class II designation. (Table 6-14).

Table 6-14 – Federal Prevention of Significant Deterioration Allowable Increments

Standards	(ug/m^3)	National Ambient	Class I	Class II
Particulates	Annual Arith. Mean	50	4	17
	24-hr Average	150	8	30
Sulfur Dioxide	Annual Arith. Mean	80 (0.03 ppm)	2	20
	24-hr Average	365 (0.14 ppm)	5	91
	3-hr Average	1300 (0.50 ppm)	25	512
Nitrogen Dioxide	Annual Arith. Mean	100 (0.053 ppm)	2.5	25

Data from EPA website, www.epa.gov and BLM, 2002

B. Air Quality Monitoring and Enforcement.

An agreement between the Tribe and Montana Power Company, now Pennsylvania Power and Light (PP&L) consists of monitoring stations at the northern boundary of the Northern Cheyenne Reservation. The monitoring stations are called PSD (Prevention of Significant Deterioration) sites. All monitoring and equipment is paid for by PP&L and has been running from March 1981 through the present. There are three monitoring stations that measure SO_2, NO_2, wind speed and direction, precipitation, barometric pressure, solar radiation, temperature, and dew point. One of the sites contains a nephelometer to monitor visibility. Also, a digital camera takes two pictures per day of the Colstrip power plants, one at 9:00 am and one at 3:00 pm. Since 1996, the Tribe has been responsible under contract for the maintenance, calibration and reporting of these three stations. Reports go to the Montana Department of Environmental Quality (MDEQ), the EPA, and PP&L. (Littlewolf, 2002).

SO_2 and NO_2 data from January 1999 through June 2000 are available from the Garfield PSD and the Badger PSD and represent baseline air quality characteristics on the northern boundary of the Reservation. Graphical representation of the data are presented in Appendix E. The data indicate that SO_2 during this time ranged from zero to 0.021 ppm based on hourly data; however, the annual average averages remain close to zero. (Littlewolf, 4/12/02). NO_2 values ranged from zero to 0.034 ppm. The annual average for NO_2 is usually very close to zero.

According to Jay Littlewolf (2002), other monitoring occurs in Lame Deer through various EPA grants. PM-10 monitoring was initiated in Lame Deer in 1988. Approximately 5 years ago, through an EPA Clean Air Act Section 105 Grant, a Continuous Real Time Monitoring System (TEOM) was installed. Monitoring occurs on a daily basis from midnight to midnight for PM-10, wind speed and direction, temperature, barometric pressure, and precipitation. At the same site in Lame Deer, through an EPA 103 Grant, PM-2.5 monitoring occurs. This involves taking a sample once every three days for analysis at an

outside laboratory. Also approved on an EPA Section 103 Grant, but not yet implemented, is a visibility monitoring system called IMPROVE (Interagency Monitoring of Protected Visual Environments).

A summary of PM-10 data obtained from 1999-2000 quarterly reports are presented in Appendix E, Tables 1-2. Table 1 represents quarterly arithmetic mean concentrations of 24-hour average readings taken every six days in the quarter. The range of readings throughout the quarter is also presented. The mean values fluctuate between 10 and 22.9 ug/m^3 in 1999-2000. The PM-10 24-hour average "not to exceed" value is 150 ug/m^3. In the past, this standard has been exceeded, but not in 1999-2000. Table 2 represents quarterly mean concentrations of daily PM-10 data in ug/m^3. Daily values in 1999 and 2000 ranged from 1.6 to 131.3 ug/m^3.

If air quality parameters are exceeded, the EPA is responsible for the enforcement of the standards. The Tribe is working towards developing a mechanism for enforcing Tribal air quality standards through the development of a TIP (Tribal Implementation Plan), which has to be approved by the EPA. (Littlewolf, 2002).

C. Lame Deer PM-10 Non-Attainment.

On August 7, 1987, Lame Deer was designated as an area having the potential to exceed the National Ambient Air Quality Standard (NAAQS) for PM-10, a measure of 10-micron or smaller suspended particulates (Appendix E; Tables 1-2). Studies indicate that airborne road dust is the cause of the noncompliance. (MDNRC, 1996). According to the Tribe, magnesium chloride is being used on some road sections of the Reservation and may reduce the sanding material applied to roads. Other existing sources of air pollution on and surrounding the Reservation include coal-fired power plants, coal strip mines, agricultural operations, wood waste burning and home heating, vehicle traffic on unpaved roads and wind erosion from exposed areas.

V. Mineral Resources.

Mineral resources on the Northern Cheyenne Indian Reservation consist primarily of coal and its derivatives. There are no known occurrences of metallic minerals. Non-metallic minerals include building stone, sand and gravel, bentonite, claystone, and clinker deposits. (Mapel, 1975).

A. Coal.

Coal is one of the most abundant and valuable mineral resources on the Northern Cheyenne Reservation. The Tribe controls an estimated 450,000 acres of coal rights lying in Bighorn and Rosebud Counties, MT. (Stagg, 1994). The coal resources on the Reservation, contained within the Fort Union Formation, are classified as subbituminous in rank, with a relatively high moisture content, a low ash and sulfur content, and a relatively high heat content. (Stagg, 1994; Mapel, 1975).

Several estimates of the coal reserves on the Northern Cheyenne Reservation have been made. The US Geological Survey and the US Bureau of Mines estimated the total coal reserves on the Reservation to be 23 billion tons, of which 5-6 billion tons may be mined by surface methods. (Mapel, 1975). A more specific study was conducted in the vicinity of Rosebud Creek which estimated that there are 4.8 billion tons of coal in that region, of which 1.8 billion tons is strippable. (Heffern, 1979). A study by Stagg Engineering on the Knobloch Coals on the Reservation near the Tongue River estimated coal resources to exceed 56 billion tons of coal, of which 3.3 billion tons would be strippable. (Stagg, 1994). In all cases, it has been estimated that the Northern Cheyenne Tribe owns at least 5 billion tons of minable coal on the Reservation.

B. Conventional Oil and Gas.

Underground accumulations of oil and gas can occur where structural traps such as domes or anticlines or stratigraphic traps locally impede migration. The Northern Cheyenne Reservation has been prospected for oil and gas intermittently since 1952, but none has been found. (Mapel, 1975). Geologic relations and trends indicate that oil and gas accumulations could be present on the Reservation and increased attention is given to the Greybull Sandstone. (Lopez, 2000). Potential reserves for this lead are estimated at 6.4 million barrels of oil. (Lopez, 2000). Confirmed oil and gas resources on the Northern Cheyenne Reservation cannot be quantified at this time.

C. Coalbed Methane.

Initial estimates of methane gas on the Reservation were approximately three billion cubic feet. (Little Coyote, 2001). Five wells were drilled on the Reservation and minimum amounts of gas were found. The highest gas content measured was 65 ft^3/ton. At that time, the range of profitable yield was 55 to 164 ft^3/t, and the conclusion of the study was that methane gas development would be uneconomical. (Little Coyote, 2001; Herco/Hampton, 1989).

In 1991, the Tribe received funding from the BIA to evaluate the Reservation's coal beds for the presence of methane gas. Two wells were drilled and a variety of tests were performed both on the well and on the core and cuttings. It was determined during this project that the outcrop pattern of the coal beds along the topographic divide suggests that most of the coal beds between the Tongue River and Rosebud Creek will have a low hydrostatic head and minimal amounts of methane. This does not detract from the high potential for methane retained in a coal seam totally disconnected to outcrop. (Northern Cheyenne Tribe, 1991).

D. Non-Metallic Minerals

1. Bentonite.

Bentonite is a type of clay consisting essentially of the mineral montmorillonite. It is used in drilling mud, foundry sand, animal feed, and for waterproofing and sealing, pond lining, and many other industrial applications. The bentonite exposed on the Northern Cheyenne Reservation is not of sufficient quality or quantity to be of significant potential economic importance; however, the reserves are adequate for the local needs of the Northern Cheyenne Tribe in the foreseeable future. (Mapel, 1975).

2. Building and Ornamental Stone.

The Tribe has locally mined sandstone for construction purposes for many years. Sandstone outcrops on the Reservation are extensive; however, most of it is too massive or not sufficiently indurated to be suitable for mining. (Mapel, 1975). Clinker deposits are used to a limited extent as a building and ornamental stone. These resources will continue to be used locally and represent a valuable resource to the Tribe although little economic value can be assigned.

3. Claystone and Shale.

The Tongue River Member of the Fort Union Formation contains claystone and shale that is suitable for making brick, and could also be used as a lightweight aggregate for concrete. (Mapel, 1975). Test results just south of the Reservation performed by the Montana Bureau of Mines and Geology suggest that the Reservation contains substantial and wide spread clay resources suitable for brick and aggregate uses. (Berg and others, 1973).

4. Clinker.

Clinker is a term used to describe the partly melted and vitrified rock that are produced from the fusing and melting of an overlying formation by the intense heat that rises from an underlying burning coal bed. (Mapel, 1975). Coal beds in the Tongue River Member of the Fort Union Formation more than about 5 feet thick commonly have burned along their outcrops, leaving conspicuous shades of red, erosion-resistant rock on the Reservation. Clinker deposits are abundant on the Reservation. The greatest potential use for clinkers on the Northern Cheyenne Reservation is for road material. Clinker is also crushed and used for roofing granules and walkways, etc.

5. Sand and Gravel.

Productive deposits of sand and gravel occur along the Tongue River and Rosebud Creek. The deposits are used locally for road construction and maintenance; however, these deposits are neither plentiful nor of particularly good quality to be used as an economic resource. (Mapel, 1975).

VI. Fish and Wildlife.

A. Wildlife.

Wildlife inhabits all parts of the Reservation and has much cultural and economic importance to the Tribe. The Reservation environment supports a variety of wildlife including big game animals, small mammals, migratory birds, raptors, waterfowl, amphibians, and reptiles. The aquatic resources are just as diverse including some 32 different fish species. Population levels are impossible to estimate because essential population data has not been collected and unregulated hunting has made most species very wary and difficult to monitor. However, indications from the limited data collected are that big game populations are far below what the habitat can support. Table 6-24 summarizes estimated population of different wildlife species on the Reservation in 1972.

Wildlife inventories, wooded riparian corridor types, and critical wildlife areas were documented as part of the Northern Cheyenne Tongue River Watershed Conservation Plan in 1994. During a two-week inventory completed in late July and early August, 49 wildlife observations were made. There were approximately 234 miles of wooded riparian corridors identified. A variety of wildlife species were observed while conducting the range and grazeable woodland inventory. The mule deer was the only game animal observed. Game birds included sharp-tailed grouse, sage grouse, turkey and mourning doves. Raptors included the golden eagles, prairie falcons, American kestrel, red-tailed hawk, northern goshawk and turkey vulture. Non-game observations included prairie dogs, rattlesnakes, white-tailed jackrabbits, cottontails and pine squirrels. Observations of predators were limited to the coyote.

1. Mammals.

The variable topography and cover types on the Reservation support several mammal species. Big game species on the Reservation are white-tailed deer, mule deer, pronghorn antelope, elk, buffalo, black bear and mountain lion. Upland game birds, wild turkeys, hawks, eagles, mule and white-tailed deer, pronghorn antelope, and elk are all of particular importance to the Tribe. The deer population has decreased recently as the result of year around hunting; elk migrate through the Reservation, but do not remain. (Northern Cheyenne Tribe, 1999).

Non-game species include white-tailed jackrabbits, prairie dogs, cottontails, beavers, muskrat, mink and pine squirrels. Prairie dog towns provide habitat for many vertebrate species, including several rare or endangered species such as the burrowing owl, mountain plover, and black-footed ferret. Predators include coyote, black bear and mountain lion.

The reach of the Tongue River bordered by the Northern Cheyenne Reservation includes about 2,584 acres of riparian hardwood forest and 2,159 acres of riparian grasslands. (Northern Cheyenne Tribe, 1996). Historically the Tongue River breaks provided excellent habitat for elk, deer, and pronghorn. Mule deer especially thrived in the open, broken topography of the breaks. Upper Logging, Kelty, and Tie Creeks offer prime habitat; including meadows, ravines, steep dry slopes, brushy draws, along with patches of dense timber. The potential for 10 mule deer and 3 to 5 elk per square mile exists.

Tribal members have always valued the forest for hunting. Currently, deer levels are extremely depressed due to year-around hunting. Occasionally elk move onto the Reservation from surrounding areas, but they rarely stay around long. Nonetheless, the mix of forest cover, riparian habitat, and rolling grassland qualifies as prime mule deer and elk habitat. In particular, the rough, rocky terrain of the Tongue River breaks is ideal for both forage and security.

2. Birds.

As noted for mammals, the variable topography and cover types on the Reservation support several bird species. A bird inventory was conducted from 1998-2001 on the Northern Cheyenne Reservation. (Northern Cheyenne Tribe, 2001e). In addition to waterfowl, raptors and upland game birds, many passerine birds were observed on the Reservation. These include mountain bluebird, red breasted nuthatch, house wren, eastern and western kingbird, brown headed cowbird, robin, brown thrasher, red-winged blackbird, common grackle, common nighthawk, and northern flicker. (Northern Cheyenne Tribe, 1996). A total of 114 bird species were identified in the inventory. (Table 6-15).

a. Waterfowl

The Northern Cheyenne Indian Reservation is located within the Central Flyway, which contains important migration corridors. Bighorn, Rosebud, Treasure, and Yellowstone counties are a major habitat for nesting, migrating and wintering waterfowl. Rivers and stockponds in the region provide important habitat for resident ducks and nesting areas for migrants. A large variety of ducks, geese, and shorebirds use riparian-wetland habitats within the region for nesting and migration stopovers. Common species observed downstream of the Tongue River Reservoir include Canadian geese, common mergansers, mallards, shovelers, and blue-winged and green-winged teal, pintail, and gadwall. (Northern Cheyenne Tribe, 1996).

b. Raptors

Raptors on the Reservation include bald and golden eagles, peregrine falcons, harriers, American kestrels, red-tailed hawks, sharp skinned hawks, northern goshawks and turkey vultures. Reservation owl species include the snowy owl, burrowing owl, screech owl, short-eared owl, and great horned owl. (Northern Cheyenne Tribe, 1989).

Some of these raptors have been identified by the State of Montana, the USFS, or the BLM as sensitive species or species of concern. Those listed by the State include northern goshawk, golden eagle, peregrine falcon, and the burrowing owl.

c. Upland Game Birds

These include the sharp-tailed grouse, sage grouse, Hungarian partridge, ringneck pheasant, turkey and mourning doves. (Northern Cheyenne Tribe, 1989). Sharp-tailed grouse are generally found in the grassland, shrub-grassland, and woodland vegetation areas. Their habitat includes hills, benches, and rolling topography that have good stands of residual cover composed chiefly of grasses for roosting, feeding and nesting.

Sage grouse are widely distributed in suitable habitat, but because numbers have declined significantly over the last 20 years they are a possible candidate for listing under the Endangered Species Act (ESA). Sage grouse are primarily associated with big and silver sagebrush communities in grassland-shrub and shrub vegetation types. The importance of mature sagebrush with a good under story of grasses and forbs to sage grouse is well documented.

Table 6-15 - Bird Species Identified on the Northern Cheyenne Indian Reservation, 1998-2001

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
American Avocet	Recurvirostra americana	Dark-eyed Junco	Junco hyemalis	Red Crossbill	Loxia curvirostra
American Coot	Fulica americana	Downey Woodpecker	Picoides pubescens	Red-breasted Nuthatch	Sitta canadensis
American Crow	Corvus brachyrhynchos	Eastern Kingbird	Tyrannus tyrannus	Redhead	Aythya americana
American Goldfinch	Carduelis tristis	European Starling	Sturnus vulgaris	**Red-headed Woodpecker**	**Melanerpes erythrocephalus**
American Kestrel	Falco sparverius	**Ferruginous Hawk**	**Buteo regalis**	Red-shafted Flicker	Colaptes auratus cafer
American Redstart	Setophaga ruticilla	Gadwall	Anas strepera	Red-tailed Hawk	Buteo jamaicensis
American Robin	Turdus migratorius	Golden Eagle	Aquila chrysaetos	Red-winged Blackbird	Agelaius phoeniceus
American Wigeon	Anas americana	Gray Catbird	Dumetella carolinensis	Ring-necked Pheasant	Phasianus colchicus
Bald Eagle	**Haliaeetus leucocephalus**	Great Blue Heron	Ardea herodias	Rock Dove	Columba livia
Bank Swallow	Riparia riparia	Great Horned Owl	Bubo virginianus	Rock Wren	Salpinctes obsoletus
Barn Swallow	Hirundo rustica	Green-winged Teal	Anas crecca	Sandhill Crane	Grus canadensis
Belted Kingfisher	Ceryle alcyon	Hairy Woodpecker	Picoides villosus	Say's Phoebe	Sayornis saya
Black-and-white Warbler	**Mniotilta varia**	Horned Grebe	Podicepts auritus	Sharp-tailed Grouse	Tympanuchus phasianellus
Black-backed Woodpecker	**Picoides arcticus**	Horned Lark	Eremophila alpestris	Song Sparrow	Melospiza melodia
Black-billed Magpie	Pica pica	House Sparrow	Passer domesticus	Spotted Sandpiper	Actitis macularia
Black-capped Chickadee	Parus atrucapillus	House Wren	Troglodytes aedon	Spotted Towhee	Pipilo maculatus
Black-headed Grosbeak	Pheucticus melanocephalus	Killdeer	Charadrius vociferus	Swainson’s Hawk	Buteo swainsoni
Blue-winged Teal	Anas discors	Lark Bunting	Calamospiza melanocorys	Townsend's Solitaire	Myadestes townsendi
Bohemian Waxwing	Bombycilla garrulus	Lark Sparrow	Chondestes grammacus	Tree Swallow	Tachycineta bicolor
Brewer's Blackbird	Euphagus cyanocephalus	Lazuli Bunting	Passerina amoena	Turkey Vulture	Cathartes aura
Brewer's Sparrow	Spizella breweri	Lesser Scaup	Aythya affinis	Upland Sandpiper	Bartramia longicauda
Brown Thrasher	Toxostoma rufum	**Lewis' Woodpecker**	**Melanerpes lewis**	Veery	Catharus fuscescens

Common Name	**Scientific Name**	**Common Name**	**Scientific Name**	**Common Name**	**Scientific Name**
Brown-headed Cowbird	Molothrus ater	Long-billed Curlew	Numenius americanus	Vesper Sparrow	Pooecetes gramineus
Burrowing Owl	**Speotyto cunicularia**	Mallard	Anas platyrhynchos	Violet-green Swallow	Tachycineta thalassina
Canada Goose	Branta canadensis	Marbled Godwit	Limosa fedoa	Western Kingbird	Tyrannus verticalis
Cassin's Finch	Carpodacus cassinii	Marsh Wren	Cistothorus palustris	Western Meadowlark	Sturnella neglecta
Cassin's Kingbird	**Tyrannus vociferans**	Merlin	Falco columbarius	Western Tanager	Piranga ludoviciana
Cedar Waxwing	Bombycilla cedrorum	Mountain Bluebird	Sialia currucoides	Western Wood-Pewee	Contopus sordidulus
Chimney Swift	Chaetura pelagica	Mourning Dove	Zenaida macroura	White-crowned Sparrow	Zonotrichia leucophrys
Chipping Sparrow	Spizella passerina	Northern Flicker	Colaptes auratus	White-throated Swift	Aeronautes saxatalis
Clark's Nutcracker	Nucifraga columbiana	**Northern Goshawk**	**Accipiter gentilis**	Wild Turkey	Meleagris gallopavo
Clay-colored Sparrow	Spizella pallida	Northern Harrier	Circus cyaneus	Wilson's Phalarope	Phalaropus tricolor
Cliff Swallow	Hirundo pyrrhonota	Northern Oriole	Icterus spp.	White-breasted Nuthatch	Sitta carolinensis
Common Goldeneye	Bucephala clangula	Northern Pintail	Anas acuta	Wood Duck	Aix sponsa
Common Grackle	Quiscalus quiscula	Northern Rough-winged Swallow	Stelgidopteryx serripennis	Yellow Warbler	Dendroica petechia
Common Nighthawk	Chordeiles minor	Northern Shoveler	Anas clypeata	Yellow-breasted Chat	Icteria virens
Common Yellowthroat	Geothlypis trichas	Pine Siskin	Carduelis pinus	Yellow-headed Blackbird	Xanthocephalus xanthoceph
Cooper's Hawk	Accipiter cooperii	Prairie Falcon	Falco mexicanus	Yellow-rumped Warbler	Dendroica coronata

Bold indicates Species of Concern; underlined indicates Species on Review (MT Natural Heritage Program, 2001)

3. Reptiles and Amphibians.

Specific data on reptiles and amphibians on the Reservation is lacking, however, rattlesnakes were observed. The 1998 Montana Gap Analysis Project (MT-GAP) indicates that Rosebud and Bighorn Counties among several others in southeastern Montana support 9 species of amphibians and 14 species of reptiles. These include one species of salamander, four species of frogs, four species of toads, three species of turtles, two species of lizards, and nine species of snakes. The Montana Fish, Wildlife, and Parks has expressed particular concern about five of these species including the northern leopard frog, tiger salamander, hognose snake, milk snake, and the spiny softshell.

Leopard frogs and the northern chorus frog were observed in the Tongue River Reservoir area. The snapping turtle also has been seen. Other common species associated with aquatic habitats for some part of their life cycle are likely to include: the tiger salamander, plains spadefoot toad, painted turtle, and spiny-softshell turtle.

Leopard frogs are locally abundant in southeastern Montana. They are associated with permanent slow moving water bodies with considerable vegetation, but may also range into moist meadows and grassy woodlands and occasionally agricultural areas. They are most often associated with riparian habitats and on prairies near permanent water. Tiger salamanders occur throughout the planning area wherever there is terrestrial substrate suitable for burrowing and a nearby body of water for breeding. (MT-GAP, 1998).

4. Species of Concern.

Species currently listed as threatened, endangered or candidate species under the Endangered Species Act (ESA) that occur or may be present on the Northern Cheyenne Reservation include the bald eagle, peregrine falcon, swift fox, and mountain plover. Prairie dog colonies also provide potential habitat for black-footed ferrets. (Northern Cheyenne Tribe and BIA, 1999). In addition to species that are federally protected under the Endangered Species Act, the State of Montana has designated additional species of concern within its jurisdictional boundaries. There are five rankings for State Species of Special Concern; the highest ranking is classified (S1). State Species of Special Concern that occur or may be present on the Reservation include the swift fox, northern goshawk, burrowing owl, and the black-tailed prairie dog. Table 6-16, includes species listed or proposed for protection under the Endangered Species Act and mentioned in the DEIS and, species classified as sensitive by the BLM and US Forest Service, and species considered to be critically imperiled in the State of Montana that may occur on the Northern Cheyenne Reservation.

Section 7(c) of the ESA requires that federal agencies proposing actions complete a biological assessment to determine the effects of the proposed actions on listed and proposed species. Additionally, birds, raptors, and eagles are protected under the Migratory Bird Treaty Act and Bald Eagle Protection Act. The Migratory Bird Treaty Act, 16 U.S.C. 703, enacted in 1918 does not require intent to be proven and prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations. Section 703 of the Act states, "Unless and except as permitted by regulations... it shall be unlawful at any time, by any means or in any manner, to take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird...". The Bald Eagle Protection Act, 16 U.S.C. 668, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing activities. Permits for Native American ceremonial use of eagle parts are available. Violation of these prohibitions is a criminal violation regardless of where the activity occurs, whether it is on public or private lands.

Table 6-16 - Species of Concern found on or adjacent to the Northern Cheyenne Reservation (NCT, 2001e) and Federally Listed Endangered, Threatened, and Proposed Animal Species Present in Southeast, South Central, and North Central Montana. (as listed in BLM, 2002).

Common Name	Scientific Name	State of Montana Rank (1)	US Fish and Wildlife Service Federal Status (2)	US Forest Service (3)	BLM (4)
Bald Eagle	Haliaaeetus leucocephalus	S3	T		
Black-and-white Warbler	Mniotilta varia	S2/S3			
Black-backed Woodpecker	Picoides arcticus	S3		S	SS
Black-footed Ferret	Mustela nigripes	S1	E		
Black-tailed Prairie Dog	Cynomys ludovicianus	S3/S4	C	S	SS
Burrowing Owl	Athene cunicularia	S3		S	SS
Cassin's Kingbird	Tyrannus vociferans	S2			
Ferruginous Hawk	Buteo regalis	S3			SS
Gray Wolf	Canis lupus	S2/S3	E		
Grizzly Bear	Ursus arctos horriblis	S2/S3	T		
Interior Least Tern	Sterna antillarum athalassos	S1	E		
Lewis' Woodpecker	Melanerpes lewis	S3/S4			
Lynx	Lynx Canadensis	S3	T		
Milk Snake	Lampropeltus triangulum	S3			
Mountain Plover	Charadrius montanus	S2	PT		
Northern Goshawk	Accipiter gentiles	S3/S4		S	SS
Northern Leopard Frog	Rana pipiens	S3		S	SS
Peregrine Falcon	Falco peregrinus	S2		S	SS
Red-headed Woodpecker	Melanerpes erythrocephalus	S3/S4			
Snapping Turtle	Chelydra serpentine	S3			SS
Spiney Softshell	Apalone spinifera	S3			SS
Swift Fox	Vulpes velox	S3		S	SS
Western Hognose Snake	Heterodon nasicus	S3			

Rank and listing obtained from Montana Natural Heritage Program, 2001.

(1) S1 is critically imperiled because of extreme rarity or because of some factor making especially vulnerable to extinction; S2 is imperiled because of rarity or because of other factors demonstrably making it very vulnerable to extinction throughout its range; S3 is either very rare and local throughout its range, or found locally in a restricted range, or vulnerable to extinction throughout its range because of other factors.

(2) E is listed endangered; T is listed threatened; PE is proposed endangered; PT is proposed threatened; C is candidate.

(3) S is sensitive meaning that animal species identified by the Regional Forester for which population viability is a concern as evidenced by significant downward trend in population or a significant downward trend in habitat capacity.

(4) SS is special status meaning that federally-listed species or other rare or endemic species that occur on BLM lands.

b. Threatened and Endangered Species Found on the Reservation

i. Mammals

Black-tailed Prairie Dog. The black-tailed prairie dog warrants listing by the Fish and Wildlife Service under the Endangered Species Act; however, at this time it remains only a candidate for listing. This species is capable of colonizing a variety of shrub-grassland and grassland habitats. Generally, the most frequently used habitats in Montana are dominated by western wheatgrass, blue grama, and big sagebrush and located in relatively level areas in wide valley bottoms, rolling prairies, and the tops of broad ridges. The black-footed ferret is an obligate predator of prairie dogs. Other species with close associations to prairie dogs are burrowing owls, mountain plovers, and ferruginous hawks. These are all species of concern.

Black-footed Ferret. This species was listed as endangered on March 11, 1967. Black-footed ferrets depend almost exclusively on prairie dogs for food and shelter. Black-tailed prairie dogs and their burrows are fairly abundant in areas that have not been affected by the sylvatic plague. In 1994, approximately 75% of the land previously inhabited by prairie dogs on the Reservation were inactive due to an outbreak of the sylvatic plague. Since then some of the land has recovered and is being revegetated with native grass and forbs. (Northern Cheyenne Tribe, 1996).

Swift Fox. The swift fox is believed to originally have been abundant throughout its range on the Great Plains, including Montana east of the continental divide. It was extirpated early in this century from the northern portion of its range while remnant populations in the southern portion survived human settlement of the prairies. Although no quantitative analysis of swift fox habitat selection has been undertaken, numerous studies indicate that swift foxes use, and prefer, short to midgrass prairies. The swift fox is known to inhabit areas of mixed agricultural use, but in lower densities. (MDNRC, 1996).

ii. Birds

Mountain Plover. This species was proposed for listing as threatened on February 16, 1999. The mountain plover is known to breed in short-grass prairie and shrub-steppe landscapes, in dryland and cultivated farms, and in prairie dog towns. The mountain plover tends to nest in flat, disturbed areas with short vegetation, such as moderately grazed land and oil drill pads. They are rarely found near water. (USFWS, 1999).

Bald Eagle. This species was reclassified from endangered to threatened, because of recovery status, on July 12, 1995. Bald eagles concentrate in and around areas of open water where waterfowl and fish are available. They prefer solitude, late-successional forests, shorelines adjacent to open water, a large prey base for successful brood rearing, and large, mature tree for nesting and resting. The Tongue River may be an important seasonal migration corridor for bald eagles. The bald eagle occurs on the Reservation as a seasonal migrant as well as a wintering and breeding species.

Peregrine Falcon. The peregrine falcon was de-listed on August 25, 1999, and protection from take and commerce for the peregrine falcon is no longer provided under the Endangered Species Act. However, peregrine falcons are still protected by the Migratory Bird Treaty Act. (MBTA). Marginally suitable nesting habitat exists below the Tongue River Dam. Peregrine falcons migrate through the area during spring and fall, especially along rivers and other water bodies that support waterfowl and shorebirds.

Table 6-17- Available Wildlife Species on Northern Cheyenne Reservation in 1972. (HKM, 1972).

	Available		Estimated No.	Estimated No.
Wildlife			**Year Long**	**Seasonal**
	Yes	**No**	**On Area**	**On Area**
Antelope	x		30	
Buffalo		x		
Bear		x		
Deer	x		1,000	
Elk	x			2
Moose		x		
Mountain Goat		x		
Big Horn Sheep		x		
Ducks	x			10,000
Geese	x			100
Pheasant	x		1,000	
Turkey	x		100	
Grouse	x		5,000	
Chukar		x		
Partridge		x		
Quail		x		
Dove	x			5,000
Javalina		x		
Beaver	x		25	
Muskrat	x		100	
Mink	x		25	
Otter		x		

Source: Agency Annual Report, Land Operations, Outdoor Recreation and Wildlife, BIA, 1972.

B. Aquatic Resources

The aquatic resources on the Reservation are diverse including some 32 different fish species. The current and exact status of the fishery on the Reservation is largely unknown. The major streams of concern on the Reservation are the Tongue River and Rosebud Creek. Rosebud Creek could support a game fish population with assured flow and temperature control. Rosebud Creek is not suited for trout, but it could support small mouth bass. This species prefers cool water streams with extensive riffle areas and clean bottoms.

In 1973, the Tongue River was sampled in the vicinity of the Reservation, and some data was generated regarding species composition and distribution. Small mouth bass have been established in the River and sampling showed this to be a reproducing

population. Other important sport fish included walleye, sauger, northern pike, and channel catfish. In addition, the Tongue River is unique in supporting the only population of rock bass in Montana. (HKM, 1973).

VII. Forest Resources.

The Tribe recognizes the importance of their forests as a source of many benefits and strives to manage the resource to meet both commercial and non-commercial objectives. Therefore, the quality of Reservation forest resources is viewed as function of sustainable management of watersheds, wildlife, recreation, grazing and timber production. (Northern Cheyenne Tribe, 1989).

The management of forest resources is particularly important to the Tribe because of timber sales. Lumber has been and will likely continue to be one of the greatest sources of economic benefit to Tribal members. The condition of the forest resource and its associated economy is a concern. While management goals and plans are directed at the enhancement of the resource, the benefits derived from it have and will be at risk from a range of causes, including noxious weeds, woodland pests, fire and the market for timber.

A. History.

The forests of the Reservation were first logged in the 1880s but logging virtually ceased until after World War II. Logging resumed in the 1950s, under the supervision of the BIA. Such activities were largely motivated by the need to rehabilitate the forests from a state of overgrowth and crowding. The condition of the forest was deteriorating due to fire suppression, insect infestation and over mature stands and it was feared that the resource would be lost to fire. During the 1960s, the role of forest management changed from fire protection and limited timber sales to one of active timber management. This included the development of the 1965 Timber Management Plan, a forest inventory and initiation of accelerated cutting. However, the development of long term contracts for timber sales was difficult. (US West Research, 1998).

1. Northern Cheyenne Timber Association.

Throughout the history of the Reservation, BIA has played a major role in the management of Tribal resources, including the forest. During the late 70s and early 80s, the Tribe started to exercise self-determination. In 1985, the Tribal Council chartered the Northern Cheyenne Timber Association, which specified the following goals with regard to timber management. Nevertheless, the Reservation's timber resources remain under the direct management of the BIA.

- Promote a fair and equitable compensation to the Tribe and allottees for the development of Northern Cheyenne timber resources.

- Protect and promote the interests of tribal members involved in the timber industry on the Northern Cheyenne Reservation.

- Provide employment to qualified members of the Tribe in all categories of employment in the timber industry.

- Provide members of the Tribe with skills necessary for employment and promotion to supervisory and managerial positions.

- Promote, develop and operate tribal member businesses related to the timber industry.

- Preserve and protect tribal cultural resources.

- Facilitate the marketing of timber resources, and identification of such markets.

- Advise and work with the Bureau of Indian Affairs and the Tribe to develop the full potential benefits attainable from the management and development of Northern Cheyenne timber resources.

2. Integrated Resource Management Plan.

In 1989, the Tribe and the BIA developed an Integrated Resource Management Plan. This planning process was intended to facilitate Tribal decision making necessary for the management of their resources and to fulfill NEPA. The Plan initiated resource management, workshops to refine input, and alternatives for resource development. The Plan was compiled into a report and resource atlas consisting of maps created from a GIS database.

3. National Indian Forest Reservation Management Act of 1990.

Congress passed the National Indian Forest Reservation Management Act of 1990 because of the recognized difficulty and complexity associated with the management of Tribal forest resources and the need for increased self-determination. This act and law mandated the Secretary of Interior to consult with Tribes and to contract non-federal and independent experts to assess tribal forests. This group of experts was referred to as the Indian Forest Management Assessment Team. (IFMAT). The Northern Cheyenne Reservation was thereby classified as a Category 1 Reservation, or a major forested Reservation comprised of more than 10,000 acres of commercial timberland in trust or one having more than 1.0 MMBM harvest of timber products annually. This resulted in increased funding for the Tribe. The IFMAT stated that "Indians live intimately with the environmental and economic consequences of forest-management actions" and that they have a "well recognized commitment to protect the resources that are both their heritage and legacy."

The IFMAT made four findings relevant to the Tribe and the forest resource, these are:

- A gap existed between the visions that Indians express for their forest and how these forests have been managed by the BIA in the past.

- A gap existed in funding for managing Indian forests and comparable federal and private lands.

- There was a lack of coordinated resource planning and management for Indian forests.

- There was a need for better prescription and oversight of trust standards for Indian forestry.

4. Forest Management Plan

As a result of continued refinement in the management of the Reservation's forests, the Tribe and the BIA developed a Forest Management Plan in February 1999. This plan represents a comprehensive statement of forest management policies and procedures for the time frame 1998-2007. The Plan was partially based on a 1994 Continuous Forest Inventory (CFI) and sets the harvest limits. Tribal forest-wide objectives stated in the Plan are:

- To implement the Tribe's General Timber Harvest Agreement using sustained yield management practices.

- To bring the forest under management while mitigating environmental concerns and minimizing future resource loss to fire, insects, and disease. Currently, a high percentage of very dense, poorly growing pole stands poses a substantial wildfire risk. The Tribe wishes to ensure productivity of the forest by maintaining healthy stands, sustaining watersheds, and maintaining the forest land base.

- To sustain the Tribally-owned Tongue River Lumber Company and create training opportunities for Northern Cheyenne Tribal members and their spouses in all aspects of mill operations.

- To generate income for the Tribe and its members from the sale of timber.

- To develop procedures for effectively mediating land-use conflicts related to logging and road building.

B. Tribal Forest Resources

The Northern Cheyenne Forest Management Plan (1999) states that 147,319 acres of land are forested and that 45,619 acres of forest were burned in a series of wildfires between 1983 and 1994. Most of that burned was commercial forest, 31,917 acres. The total acreage of commercial forest is 103,657 acres, of which 75% is Tribal Trust and the remainder individually allotted land. Table 6-18 shows a summary of the Reservation forestlands.

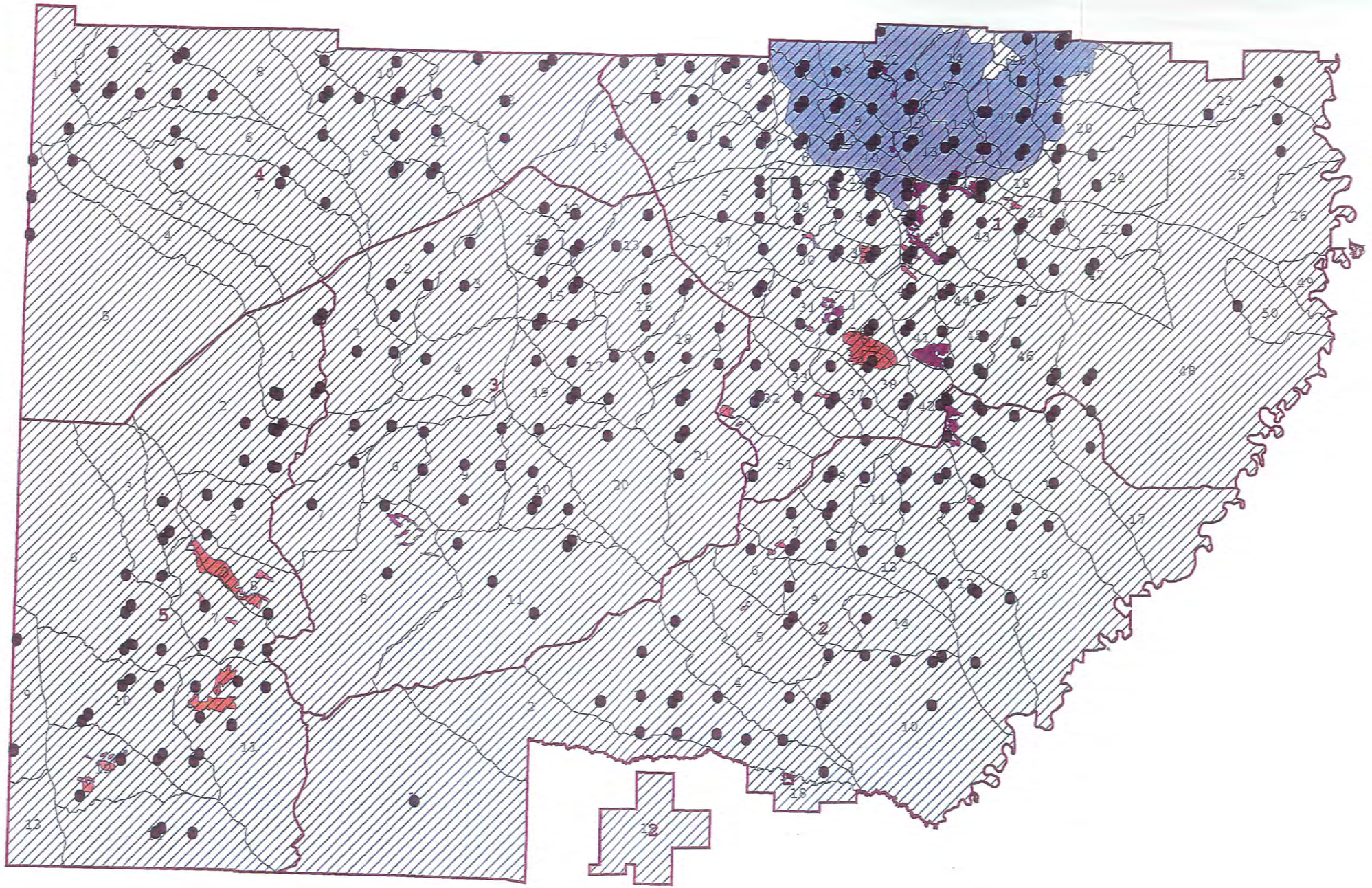
Table 6-18 – Summary of Reservation Forests.

Land Class	Acres	Percent Composition
Unburned Commercial	71,740	48.6%
Burned Commercial	31,917	21.6%
Inaccessible	15,024	10.1%
Marginally Productive	26,357	17.8%
Woodland	1,461	1.4%
Stream Buffer Zone	815	0.5%
Total:	**147,314**	**100.0%**

Reservation forestland consists exclusively of ponderosa or yellow pine. Variation exists within the ponderosa communities resulting mostly from fluctuations in temperature and precipitation associated with elevation and slope aspect. Understory plant communities also vary.

Fire is an important part of the ponderosa ecosystems. Ponderosa pine communities are normally inhabited by fire resistant plant species, which require periodic fire to maintain healthy, sustainable conditions. The long history of fire suppression within the forests of the western U.S. and on the Reservation have led to less than optimal conditions, which are indicated by pest infestation, disease and tendency for large scale and intense fires. Because of the danger of catastrophic fire, much of the management of the forest is directed at stand improvement, through thinning. Since 1979, approximately 17,000 acres of ponderosa forest have been thinned. However, human-induced fires are a problem on the Reservation. An increase in population and development in the vicinity of the Reservation poses greater fire risk for the Tribe.

Information from the Integrated Resource Management Plan (1989) is presented on Figure 6-4 (Northern Cheyenne Reservation Forestland-Timber). The approximate locations of stand inventory plots, forest management units, timber compartments, tree planting sites, logging units and thinned areas are shown. Figure 6-5 (Northern Cheyenne Reservation Forestland-Fire) shows the approximate locations of historical fire ignition points, fire fuel breaks, fuel classification zones, and historical and present burn areas.

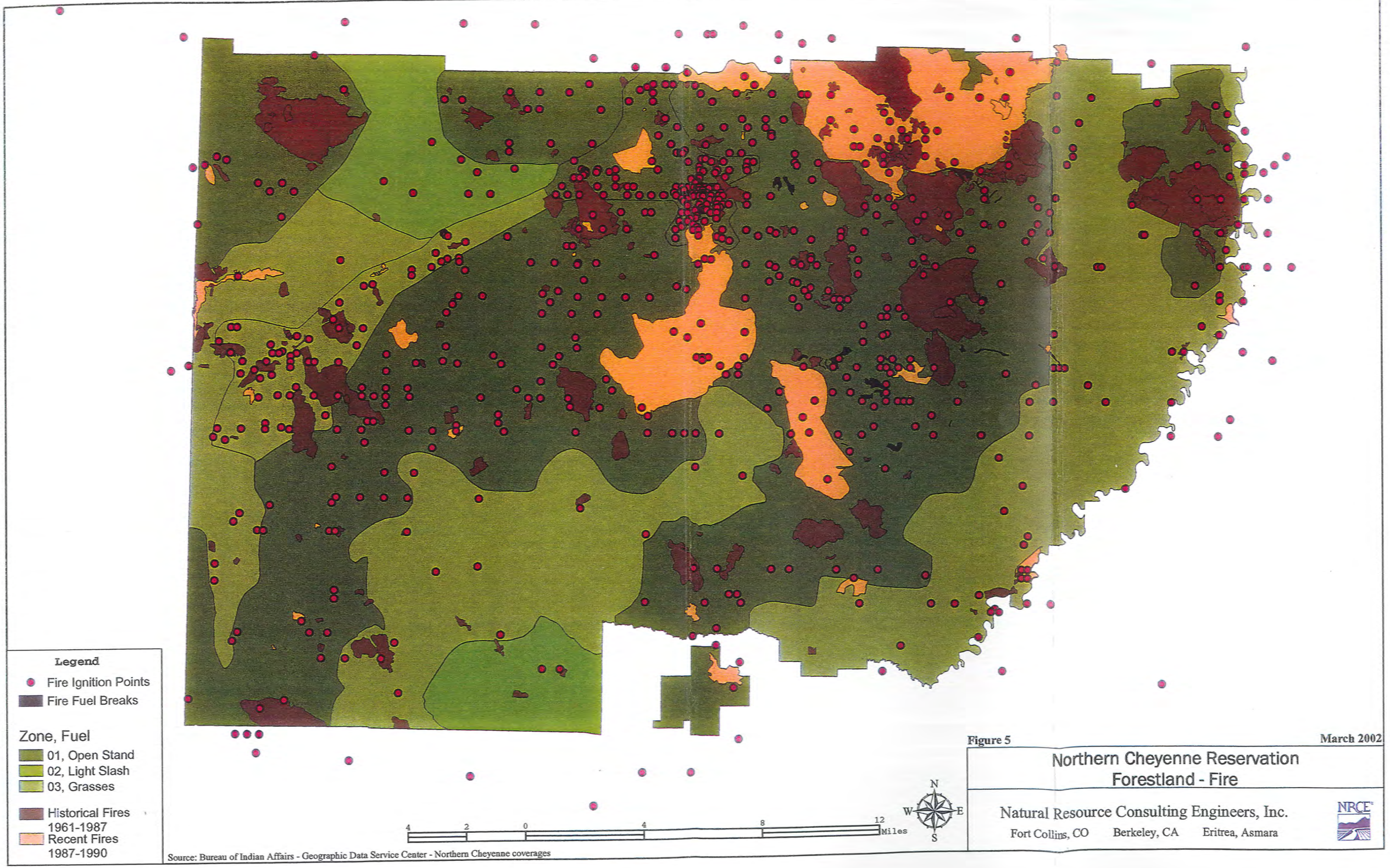


Source: Bureau of Indian Affairs - Geographic Data Service Center - Northern Cheyenne coverages

Figure 4 **March 2002**

Northern Cheyenne Reservation
Forestland - Timber

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Source: Bureau of Indian Affairs - Geographic Data Service Center - Northern Cheyenne coverages

Figure 5

March 2002

Northern Cheyenne Reservation
Forestland - Fire

Natural Resource Consulting Engineers, Inc.
Fort Collins, CO Berkeley, CA Eritrea, Asmara

NRCE

C. Forest Products Economy.

The Reservation's 103,657 acres of commercial forest contains 280 million board feet of commercial timber. Sixty percent of that merchantable timber is 10 to 16 inches in diameter; the remainder is old growth timber greater than 18 inches in diameter. (Northern Cheyenne Tribe and BIA, 1999). Some of the old growth timber is reportedly infected with red rot. Of the timber logged on the Reservation, 85% is considered commercial sawtimber. The Forest Management Plan schedules logging of 60 million board feet of timber over the period 1999-2008.

The main historical market for harvested timber is the Tongue River Lumber Company (TRLC) in Ashland, Montana, however the sawmill is presently not operating due to financial difficulties. The economy of the Reservation has been strongly dependent on the success of logging and milling operations. Until recently, the TRLC employed 60 hourly and 11 salaried employees, of which 42 were Tribal members. In 1998, Tribal payroll consisted of 1.25 million dollars of a 2 million-dollar payroll. From 1988 through 1997, stumpage payments exceeded 6.2 million dollars. (Northern Cheyenne Tribe and BIA, 1999).

VIII. Rangeland.

The primary land use within the Reservation is rangeland grazing. Within the Reservation there exist about 391,852 acres of rangeland with an estimated grazing capacity of 102,000 animal unit months (AUMs). (Northern Cheyenne Tribe, 1989). Recent estimates of grazing capacity specify 97,432 AUMs, which are managed by means of 101 range units comprising from 108 to 24,000 acres. The majority of animals are grazed under one permit, consisting of 41 sub-permittees, with the remaining units being leased to 30 individual permittees. (Northern Cheyenne Tribe and BIA, 1999).

Range units are not adequately cross-fenced, which results in distribution problems and overuse of critical areas such as riparian areas. These areas are declining in condition as indicated by stream bank destabilization, water quality degradation and loss of favorable vegetation to weeds and noxious weeds. (Northern Cheyenne Tribe and BIA, 1999).

A. History.

Information about the early history of ranching on the Reservation was provided in Chapter 2. As discussed there, BIA mismanagement of the Cheyenne herds led to the near destruction of the Cheyenne ranching economy by the end of the 1920s. By the 1930s, most of the grazing allotments on the Reservation were held by non-Indians. In 1936 the Indian Bureau helped the Tribe start the Northern Cheyenne Steer Enterprise. This expansion of Tribal grazing activities was intended to involve more Indians in ranching on the Reservation. After the Steer Enterprise in 1957, non-Indian operators began leasing again. The Steer Enterprise was reestablished in 1962, to again promote more complete Indian use of Reservation resources. (BIA, 1969).

1. Integrated Resource Management Plan

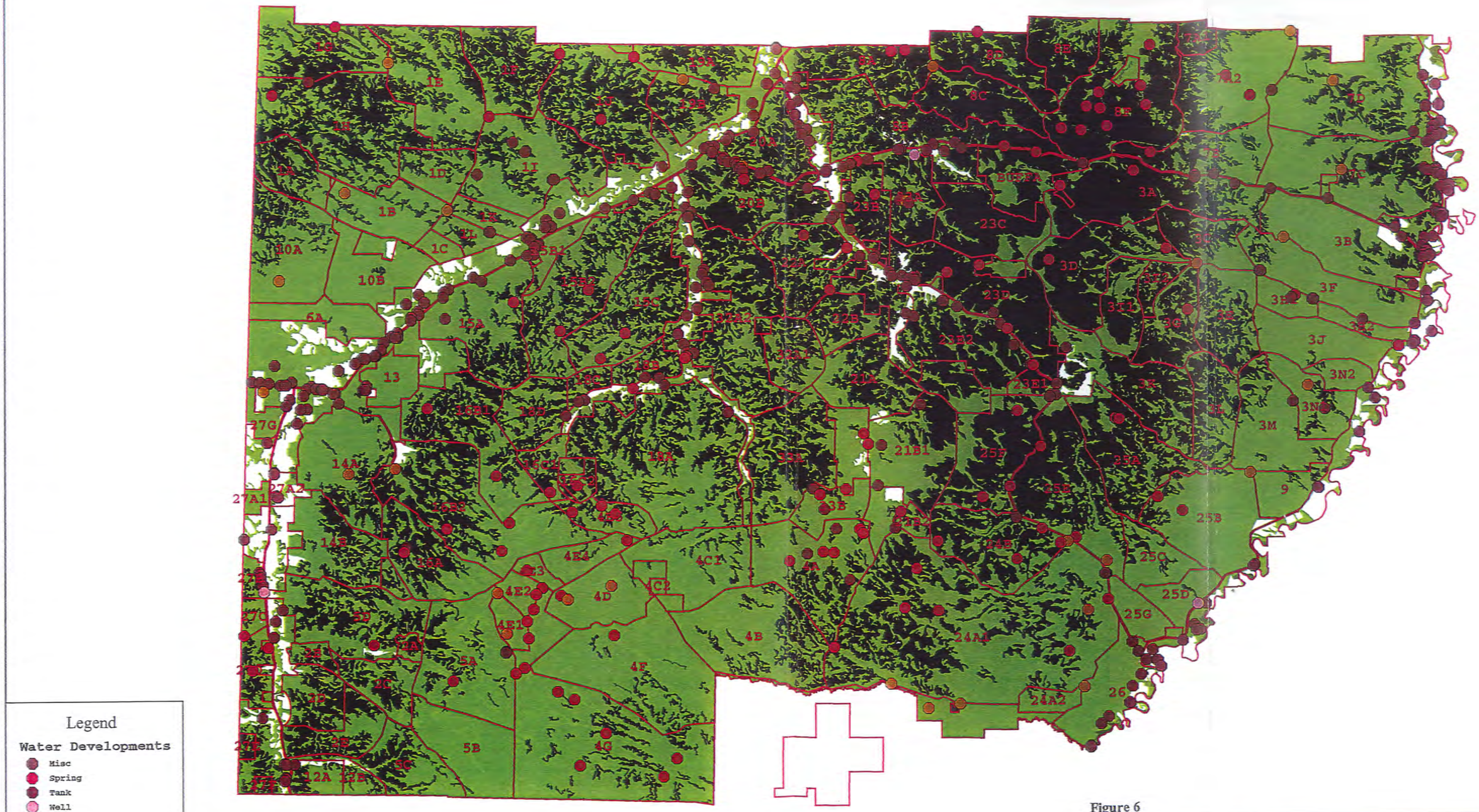
Since the 1960s, the Tribe has progressively taken a more active role in the management of managed resources. Like forestry, range management efforts have been forwarded by resolution of all resource management needs in a collective manner. The Integrated Resource Management Plan represents one document that resolves resource use issues on the Reservation. Rangeland issues and management alternatives are addressed. Rangeland resources were mapped and show range management units, locations of water developments and vegetation types. (Figure 6-6 - Northern Cheyenne Reservation Range). The database is presently being updated.

2. Northern Cheyenne Tongue River Watershed Conservation Plan

The Tongue River Conservation Plan (1996) represents an assessment of watershed conservation alternatives, which identified and evaluated the following resource concerns within a 292 square-mile study area. The topics addressed include:

- Resource Concern
- Noxious Weeds
- Prairie Dogs
- Water Supply and Treatment
- Grazing Management
- Wildlife Habitat
- Range Condition and Trend
- Water Quality
- Culturally Significant Plants
- Recreation
- Ranch Income
- Land Use
- Soil Erosion
- Irrigation Water Management
- Riparian Areas and Wetlands
- Cultural Resources
- Forest Management
- Sedimentation

The Conservation Plan recognizes three alternatives of grazing management. The basic guiding principals involve adjusting stock rates to reduce forage selection by livestock, ensuring range units receive periodic deferment of grazing during the growing season, alternating season of use, and controlling time and intensity of grazing. The three alternatives presented are: A. High Intensity, Short Duration, One Herd, B. High Intensity, Short Duration, Multiple Herds, C. Rest Rotation, Multiple Herds.



Source: Bureau of Indian Affairs - Geographic Data Service Center - Northern Cheyenne coverages

Figure 6

March 2002

Northern Cheyenne Reservation Rangeland

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B. Tribal Rangeland Resources.

Grazing on the Reservation represents the predominant land use, with about 90% of the land area of the Reservation being suitable for grazing. Grazing occurs in the open unwooded areas as well as the commercial and non-commercial forest areas. Most grazing consists of cow/calf pair operations which turn animals out in April and May and roundup in October and November. Recently yearling operations are increasing, which run stock during the summer months. Most animals stay on the Reservation year-round. (Northern Cheyenne Tribe, 1989).

Tribal goals relevant to Reservation rangeland include:

- Use rangeland to produce income for the Tribe and Allottees in a manner that will maintain or improve the resource's productivity.
- Permit and lease rangeland to provide the greatest opportunity for Tribal members.
- Provide incentives to operators to undertake improvements to range units, such as development and repair of stock watering facilities and fencing.
- Control noxious weeds and prairie dogs.
- Change range permitting to provide for mitigation of impacts to operators resulting from other resource management activities, such as logging and mineral exploration.

C. Grazing Economy.

The productivity of grazing on the Reservation is somewhat limited by the inadequate use of range units. Reasons for this include low cattle prices, inadequate hay production to sustain the herd though winter, shorter than optimal permit duration, inadequate distribution of hay produced and inadequate fencing and water development. Fencing and water distribution solutions are presently underway by means of the Tongue River Conservation Plan and the Tongue River Enhancement Project.

In the fiscal year 1999-2000, the BIA completed an appraisal of Reservation rangeland. A new grazing ordinance was enacted, and grazing permits were issued. The appraisal rate was set at $12.50 per Animal Unit Month (AUM). The council set the Tribal rates at $6.25 for original tribal land and $7.25 for acquired land. Authority was given to 2700 allottees, to grant grazing privileges. One hundred and ninety-five grazing permits were issued. (Little Coyote, 2001).

The total income produced by grazing permits was $748,501.56. Individual landowners received $200,635.67, and the Tribe received $547,635.60, constituting and increase of 22% over the previous year. It is estimated that cattle sales grossed $6,000,000, but expenditures, in terms of costs, investments and overhead, came to nearly

$4,000,000 (Bureau). Approximately 430,409 acres of the Reservation are leased for range units, farming, or home sites. There are currently 129 farm pasture leases, amounting to 18,099 acres, and totaling $80,412 in annual income. (Little Coyote, 2001).

IX. Riparian Areas and Wetlands.

The Bureau of Land Management defines wetlands as areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include marshes, shallows, swamps, lake bogs, muskegs, wet meadows, estuaries, and riparian areas. Riparian areas represent a transition between permanently saturated wetlands and upland areas. Lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams are the most typical riparian wetlands on the Reservation. (BLM, 1992).

A. Description of Reservation Resources.

Most of the wetlands on the Reservation are “lotic” ecosystems, defined as running water habitats supporting deciduous and coniferous tress such as ponderosa, dogwood, chokecherry, juniper, cottonwood, aspen and willow. Lotic ecosystems are found predominantly along the Tongue River and Rosebud Creek. Some “lentic” ecosystems are identified on the Reservation. Lentic systems are defined as temporary pools of water that dry up in the late summer and are important to migratory bird species.

The types of riparian communities on the Reservation include the broadleaf, the mixed broadleaf and conifer, the graminoid and forb, the shrub, and the mixed. (Figure 6-7). The Reservation contains approximately 20,000 acres of wetlands, which support 70% of the wildlife. (Rollefson, 2002). Wildlife species and cattle depend on the riparian wetlands for forage and shelter.

Most importantly, the Northern Cheyenne Tribal members use certain riparian plants for medicinal and cultural purposes. Based upon work done by William Tallbull, Assistant Professor of History-Dull Knife Memorial College, and Chairman of the Northern Cheyenne Cultural Commission in the late 1970’s and early 1980’s, it is possible to isolate wetland plants that are of cultural significance for the Northern Cheyenne. (Rollefson, 4/11/02). Tallbulls, *Plant Lore of the Northern Cheyenne*, outlines those plants found on the Northern Cheyenne Reservation that have historically provided medicinal or food value to Northern Cheyennes. Utilizing an ethno-botanical approach, a list of plants was accumulated through personal interviews with elders that are of significant cultural value. A proportion of these plants are hydrophytic, and therefore are located within wetland or riparian habitats. (Rollefson, 4/11/02).

Cross-referencing *Plant Lore of the Northern Cheyenne* with *Classification and Management of Montana’s Riparian ands Wetland Sites* and the *National List of Plant Species that occur in Wetlands*, produced the following list of Wetland Flora that are Culturally Significant to the Northern Cheyenne. (Rollefson, 4/11/02; Table 6-19). Mr.

Legend

Riparian Type

- Water
- Broadleaf
- Mixed Trees
- Graminoids and Forbs
- Shrub
- Mixed
- Streams

4 2 0 4 8 12 Miles

N W E S

Source: University of Montana - Wildlife Spatial Analysis Lab - Gap Analysis Project 90-meter Land Cover Pixels

Figure 7 **March 2002**

Northern Cheyenne Reservation Riparian Areas

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James Bauder, Professor and Soil and Water Quality Specialist at Montana State University, is currently doing a study of the bioaccumulation of CBM discharge water by various salt tolerant wetland plant species and will produce the water quality tolerances of these plants to SAR and EC. (Rollefson, 4/22/02).

Table 6-19 - Wetland Flora that are Culturally Significant to the Northern Cheyenne Tribe.

Plant Name	**Scientific Name**
June/Service Berry	*Amelanchier alnifolia*
Red Osier Dogwood	*Cornus stolinifera*
Common Spike Rush	*Eleocharis palustris*
Horsetail / Field	*Equisetum arvense*
Wild Licorice / American	*Glycyrrhiza lepidota*
Goose Berry, Red Shoot	*Ribes setosum*
Mint / Field	*Mentha arvensis*
Horsemint / W. Bergamot	*Monarda fistulosa*
Water Plant / Water	*Nasturtium officinale*
Sweet Medicine	*Oxtropis (lamnbertii)*
ChokeCherry	*Prunus virginiana*
Cottonwood, G. Plains	*Populus deltoides*
Box Elder	*Acer negundo*
Green Ash	*Fraxinus pennsylvania*
Sand Bar Willow	*Salix exigua*
Snow Berry	*Symphoricarpos*
Cattails	*Typha latifolia*
Wild Plum	*Prunus americana*
Sweet Grass	*Hierochloe odorata*
Quaking Aspen	*Populus tremuloides*
Saw Beak Sedge	*Carex stipata*
Leafy Aster	*Aster foliacius*
Stinging Nettle	*Urtica dioica*
Bulrush	*Scirpus nevadensis*
Arrow Leaf	*Sagittaria latifolia*
Golden Currant	*Ribes aureum*
SkunkBush Sumac	*Rhus tribobata*
MilkWeed, Showy	*Asclepias speciosa*
Western Yarrow	*Achilliea millefolium*
Raspberry, Red	*Rubes idaues*
Rose Bush	*Rosa arkansana*

This list and following text were developed for and taken directly from the Northern Cheyenne Reservation Wetlands Conservation Plan, as developed by Frank Desmond Rollefson in partial fulfillment for his Masters of Science Degree in Resource Management at Central Washington University, Department of Geography and Land Studies. In no way shall this information be usurped without citation and reference to the Northern Cheyenne Wetlands Conservation Plan, FDR 2002, developed within the Natural Resources and Environmental Protection Departments of the Northern Cheyenne Tribe, Montana.

B. Condition.

A Riparian Health Evaluation, conducted in 1999 and 2000, found that the majority of the wetland habitats were classified as “unhealthy” (score of <60%). The causes for deterioration of the wetland environments include alteration of stream sections, removal of shrubs and vegetation along waterways, farming at the edges of streams and a concentration of livestock use. These activities result in erosion, flooding, reduced forage, damaged stream banks, and decreased water quality. (Rollefson, 2002).

Concentrations of cattle in riparian zones have caused soils to become compacted and eliminated stream-stabilizing riparian vegetation leading to stream bank failure. As a result, streams are wider and shallower allowing increased sediment and nutrients into the streams. (Northern Cheyenne Tribe and BIA, 1999).

C. Management.

The management of riparian resources is important to the Tribe. Grazing management is one technique used to protect and restore riparian habitat. The Tribe is currently involved in the *Tongue River Enhancement Project*, which involves the development of stock water pipelines from wells and springs to distribute livestock and game throughout the Reservation and away from damaged riparian areas.

Another management technique is watershed management, where focus is placed on the entire stream system as opposed to site-specific treatments. The Tribe has developed *the Northern Cheyenne Tongue River Watershed Conservation Plan* to provide management direction and policy for natural resources. One expected result of the Conservation Plan is that riparian areas will exhibit a diverse stand of woody vegetation, both in the number of species and age classes within those species. (Northern Cheyenne Tribe, 1996).

The Tribe is currently developing a Wetland Conservation Plan. (Rollefson, 04/22/02). This plan addresses the extent and condition of wetland habitat and provides alternatives for managing the resources on the Reservation.

X. Noxious Weeds.

Once established, non-native plant species can out-compete and eventually replace native species, thereby reducing forage productivity and the overall vigor of existing native plant communities. These detrimental effects to the environment are why non-native plants are referred to as noxious weeds. Category I noxious weeds are weeds that are currently established and generally widespread in many counties of the State of Montana.

A. Species.

Noxious weed species of most concern on the Reservation include Russian Knapweed (Centaurea repens), Spotted Knapweed (Centaurea Maculosa), and Leafy Spurge (Euphorbia esula). Canadian Thistle (Cursium arvense) is widespread but not as threatening as the above mentioned weeds. (Denny, 2002). Colonization of an area is especially likely when surface disturbance occurs, such as road corridors.

Russian Knapweed (Centaurea repens). Russian knapweed will grow in cultivated fields, fence rows, roadsides, along ditch banks, and in wasted places. It is very poisonous to horses and it will give them a chewing disease (http://mtwow.org). According to Kirk Denny, there are approximately 5,000 acres of Russian knapweed on the Reservation.

Spotted Knapweed (Centaurea Maculosa). Spotted knapweed is an aggressive biennial or short-lived perennial that grows from 0.3 to 1 meter tall. The threat of spotted knapweed is greatest in range and woodlands dominated by Ponderosa pine or Douglas fir. Infestations cause soil erosion, decrease biodiversity, and reduce forage for wildlife and livestock (http://mtwow.org).

Leafy Spurge (Euphorbia esula). Leafy spurge is a persistent, deep-rooted perennial. It is found primarily in pastures, range, roadsides, woodlands and farmsteads. Leafy spurge plants contain a toxic substance, which causes scour, weakness, and even death in cattle. It is difficult to kill or control by chemicals; however, goats and sheep can be taught to eat it. (http://mtwow.org)

B. Management.

The Tribe adopted a Noxious Weed Management Plan approximately ten years ago. The plan suggests the control of noxious weeds through biological, chemical, and integrated management techniques. It was developed by the BIA and is somewhat general as no Reservation-specific weed inventory was completed for the plan. An updated Noxious Weed Management Plan is needed. The Tribe is currently in the process of inventorying weed species on the Reservation and selecting high value areas for rehabilitation. (Denny, 2002).

XI. Soils

The character and distribution of soil materials within the boundaries of the Northern Cheyenne Reservation are consistent with the surrounding region. (Bauder, 2001). Soil surveys were reviewed for Big Horn, Rosebud, Powder River, and Treasure counties, some of which are peripheral to the Reservation, revealing that the predominant soils are contiguous to southeast Montana. The entire southeastern Montana region, and specifically the lands within the boundaries of the Northern Cheyenne Reservation, are unglaciated, semi-arid high plains. (Bauder, 2001).

The Reservation is dominated by gently sloping to very steep, shallow to very deep, well-drained, sandy loamy, and clayey textured soils. These soils were formed in semi-consolidated sedimentary beds, baked sandstone and shale, colluvium, and alluvium on sedimentary plains, hills and alluvial fans. (BOR and the Northern CheyenneTribe, 1997). A generalized soil association map was obtained digitally from the State Soil Geographic Database. (USDA NRCS, 1996; Figure 6-8). Table 6-20 lists the soils shown on Figure 6-8.

The Delpoint, Yamac, Birney, and Cabbart soils are gently sloping to very steep, well drained, and loamy textured. (BOR and the Northern Cheyenne Tribe, 1997). Used mainly for range, these soils are within the 10-14 inch precipitation zone. The Delpoint soils are gently sloping to moderately sloping, moderately deep, formed in semi-consolidated loamy sedimentary bed, and are on sedimentary plains. Yamac soils are gently sloping to moderately sloping, very deep, formed in alluvium, and are on alluvial fans and sedimentary plains. Birney soils, very deep, loamy textured with numerous rock fragments, are formed in colluvium derived from baked sandstone and shale. Cabbart soils, moderately steep to very steep, shallow, are formed in semi-consolidated loamy sedimentary beds. (BOR and the Northern Cheyenne Tribe, 1997). The Havre soils are also well drained and deep soils that formed in alluvium. They are found on stream terraces and flood plains with slopes of 0 to 2 percent. (Northern Cheyenne Tribal Council and others, 1976).

Table 6-20 - Areal Extent of Soil Map Units for the Northern Cheyenne Reservation

STATSGO Map Unit	Map Unit Name	Area on Reservation (acres)[1]	Percent of Area
MT048	Bitton-Shambo-Doney	188,432	41.8
MT070	Bryant-Doney-Shambo	56,503	12.6
MT075	Yamac-Busby-Cabbart	29,433	6.5
MT089	Yamac-Birney-Cabbart	122,365	27.2
MT175	Doney-Shaak-Wayden	2,551	0.6
MT321	Lamedeer-Ringling-Twin Creek	35,364	7.9
MT668	Yamac-Havre-Birney	10,676	2.4
MT676	Yawdim-Delpoint-Thurlow	4,320	1.0
		Total	**100**

1 (area extracted from the GIS coverage)

Bryant, Shambo, Doney, and Bitton soils are gently sloping to very steep, well-drained, loamy textured and are mostly used for range. (BOR and the Northern CheyenneTribe, 1997). These soils are within the 15-19 inch precipitation zone. Bryant soils are formed in colluvium on sedimentary plains and are gently sloping to strongly sloping and very deep. Shambo soils are similar to Bryant soils and formed in alluvium and alluvial fans on sedimentary plains. Doney soils are gently sloping to strongly sloping and

MT676
MT048
MT089
MT668
MT089
MT668
Rosebud Creek
MT075
MT048
MT321
MT089
MT668
MT175
MT070
Tongue River
MT668
MT048
MT089

Legend

River/Creek

Map Unit ID

- MT048
- MT070
- MT075
- MT089
- MT175
- MT321
- MT668
- MT676

4 2 0 4 8 12 Miles

Source: USDA - Natural Resources Conservation Service - STATSGO Data Base for Montana

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Figure 8 April 2002

Northern Cheyenne Reservation Generalized Soil Association Map

Natural Resource Consulting Engineers, Inc.

Fort Collins, CO Berkeley, CA Eritrea, Asmara

NRCE

moderately deep. They are formed in semi-consolidated loamy sedimentary beds. Bitton soils are strongly sloping to very steep, very deep, loamy textured with many rock fragments, formed in colluvium derived from baked sandstone and shale.

Lame Deer, Ringling, and Twin Creek soils are moderately steep to very steep, very deep, formed in colluvium and alluvium derived from baked sandstone and shale. (BOR and the Northern CheyenneTribe, 1997). They are used mainly for woodland. Lame Deer soils are well drained and loamy textured with many rock fragments. They are commonly found on hills. Ringling soils are excessively drained and loamy textured with many rock fragments. Twin Creek soils are well drained and loamy textured and formed in alluvium. This soil association are found on hills. (BOR and the Northern Cheyenne Tribe, 1997).

The Yawdim and Wayden soils are classified as well drained and shallow formed in material weathered from shale. They are located on uplands and have slopes of 8 to 70 percent. (Northern Cheyenne Tribal Council and others, 1976).

CHAPTER 7

NORTHERN CHEYENNE CULTURAL RESOURCES

I. What Constitutes a Northern Cheyenne "Cultural Resource."

Many terms are used to describe the remains of a people's past. Archaeologists tend to use the term archaeological site or just site. A site is a location that either contains material remains (artifacts such as chipped stone or historic bottles) or is a place known to be associated with a particular historic event, for example a Lewis and Clark camp. Sites may date from any time period but are generally at least 50 years old. Examples of sites include homesteaders' cabins, railroads, dams, locations where the earliest peoples in the area made tools, plant gathering areas, bison kills, scarred trees and anything else that shows a people's imprint on the landscape.

Landscapes may also be sites especially when they have been created by man's modification of the environment, for example the Berkeley Pit in Butte, Montana. A district is an area that contains several sites. A building or a structure such as a dam may be a site. A single artifact (e.g., a cold war era bomber that crashed in the Nevada testing range) or object such as a sculpture may also be described as a site.

The term "cultural resource" tends to be used by land managers and resource specialists who must evaluate a wide variety of resource concerns such as fish and wildlife as well as evidence of a people's past (cultural resources). This term is used to differentiate "natural" from man-made or cultural resources.

The term "historic property" is also used. Historic property has a very specific legal meaning. A historic property is a site or cultural resource that has been evaluated as significant or important to the nation's past, i.e. it has been deemed eligible to the National Register of Historic Places. All historic properties are sites and cultural resources but not all sites and cultural resources are historic properties.

Archaeologists and academically trained resource managers routinely place physical limits or boundaries on sites. These limits are commonly based on the distribution of artifacts on the ground. Boundaries are necessary and useful management tools. However, site boundaries may have little to do with how people used the site location in the past or how it is used today.

The definition of boundaries is particularly problematic when dealing with sites with ongoing spiritual use. When a Cheyenne person decides, or is called to go fast, he begins both a spiritual and physical journey. He must prepare himself. He must ask his Elders for guidance. He must gather those things he will leave as offerings at his fasting place. When he begins his journey he begins to separate himself from everyday life in the community. Sometimes his spiritual advisors will accompany him. In some cases he will be required to accomplish his journey in stages. For example, he may go to Bear Butte and leave cloth offerings and pledge his intent to fast in the future. The

following spring he will fulfill this vow at Bear Butte or another sacred place. Alternately, he may make a pilgrimage to the Big Horn Medicine Wheel. In this case, he may be required to stop four times along the trail to the Big Horn Medicine Wheel. At each stop, he will pray and make offerings, sometimes at ancient cairns to which he may add stones.

During the physical journey the person prepares himself spiritually for his most serious undertaking, communicating with the spirit world. While on the journey the person's thinking and acting change. He ignores everyday mundane concerns and concentrates more on the spiritual aspects of life. The spiritual qualities of his environment become more recognizable to him. At the end of his journey when he can first see the site of his pilgrimage, for example, Bear Butte, Chalk Buttes, or the Big Horn Medicine Wheel, he is already in the spiritual sphere of influence of that sacred place. He does not leave this sphere of influence until he has completed his fast and rejoins his spiritual advisors and has been ceremonially welcomed back into the community.

Although traditionalists recognize boundaries as management tools necessary for federal agencies to function, they have no meaning in the context of traditional cultural activities. When a Northern Cheyenne or Sioux sees Bear Butte he recognizes it as a sacred place and his actions change accordingly.

The National Historic District boundary around Bear Butte is irrelevant both at the level of behavior and belief. It becomes relevant only when some outside agency tries to violate the sanctity of the district by disturbing anything within the National Historic District boundary. This is also true of Chalk Buttes. The Northern Cheyenne recognize that the Custer National Forest has defined a management boundary around Chalk Buttes, which essentially conforms to Forest Service land boundaries. However, the Northern Cheyenne recognize a much wider area including all the area from which Chalk Buttes is visible and includes Medicine Rocks State Park. This entire area from which Chalk Buttes is visible is viewed as a powerful spiritual area that must be respected and honored. Fasting at Chalk Buttes and leaving offerings at Medicine Rocks is part of a living religious tradition where participants make both a spiritual and physical journey. During the entire journey the spiritual aspects of life are dominant. The Forest Service management boundary is irrelevant to their traditional cultural responsibility to honor these spirits in this place and to act respectfully.

The tribal-historical perspective, in contrast to the scientific-academic view of history, emphasizes the interrelationships between the past and the present, the living and the dead, people and the environment, and the spiritual and physical aspects of life. Time from this perspective is not only a chronological ordering of events but also has a quality and texture that continues into the present and future as it establishes the rationale and basis for living in the proper fashion. From this perspective, there is often

an intimate relationship between a person and his past. Time or the past provides a template for the proper way of life. It legitimizes the present by showing it is related to things that have gone before.

From the tribal-historical perspective, cultural resources are evidence that the landscape has always been physically and spiritually compatible with tribal peoples. The location of sites is interpreted as being evidence that sometime in the past, tribal peoples recognized the physical and spiritual characteristics of the landscape that made it an appropriate place to camp, hunt, fast and so on. Because traditional tribal peoples today can still recognize these same physical and spiritual characteristics of the landscape, there is a continuing tie between the people and the landscape, and between the people who created the site and those who view it today. It is this sense of connectedness that is important. Because this relationship is highly valued, sites must be shown respect and the tie to the sites may be periodically renewed by visiting them, praying and making offerings. These are significant qualities of site locations that transcend time. Therefore, from the tribal-historical perspective, it is often irrelevant whether a site/feature is 10,000 or 200 years old. The presence of the sites/features indicates an earlier relationship with the landscape and validates the continuing relationship with the area into the present.

Time in the tribal-historical perspective is divided into a minimum of five qualitative units: a sacred time when the world as we know it was created by a series of spiritual beings, a time when Ancient Indian people moved across the landscape interacting with both the physical and spiritual aspects of the world, an historic time when the immediate ancestors known from oral tradition lived their lives, the present and the future. These units of time—sacred time, Ancient Indian time, history, the present and the future—have intrinsic qualities as well as being roughly sequential, quantitative, chronological units.

Sacred time is literally holy. Events that take place in that period, such as the creation of the earth and its features, involve supernatural forces and personages. This is when the *Maheo* imbued the world with its sacred qualities. Thus the spirituality of Chalk Buttes and Medicine Rocks date from this period and in that sense precede all peoples who have lived in southeast Montana.

Ancient Indian time is that period before the coming of the Euro-Americans when people lived in a world where there was no division between the spiritual and physical aspects of life so that they lived in the proper Indian fashion. Consequently, all action and events that took place in this period are indivisibly sacred/spiritual and profane/physical. From the tribal-historical perspective, it is nonsensical to try to discuss only the physical aspects of sites from the Ancient Indian period without discussing their spiritual aspects.

Historic period sites, sites created by known ancestors, are also discussed in both physical and spiritual terms, but this is done in more personalized terms since the individuals involved are known. For example, Sitting Bull's Camp on Blue Earth/Spring Creek is known to have been the site of warrior ceremonies before the journey to Deer Medicine Rocks where the last Sundance was held before the battle at Greasy Grass, the Little Big Horn.

The present is seen as being a product of all three pasts, and it is the responsibility of the traditional Elders to pass on information about these three pasts and tribal traditions to the future, most commonly defined in terms of coming generations. For example, the Elders encampment at Chalk Butte included interested young people who came to hear their Elders' stories and participate in the other traditional cultural activities during the encampment. Historians working in the tribal-historical tradition are seen as guardians and caretakers of traditions. Part of their responsibility is to protect their knowledge and the sources of knowledge, which in some cases includes archaeological properties as well as landscapes, landforms and traditional use areas.

Cross cutting all of these categories of time is the fact that the spiritual characteristics of the landscape, although not immutable, exist in all units of time.

Generally, from the tribal-historical perspective, it is not considered important whose ancestors created an Ancient Indian or prehistoric site. Traditionalists do not generally identify cultural material scatters, petroglyphs, bison kill sites and stone feature sites as being Crow, Northern Cheyenne or Sioux. Rather, they describe why the Indians who made the site might have camped or hunted in that particular location or why they might have chosen to build particular features. What is important from this perspective is that Indians (people who share certain beliefs with the site interpreters) or spirit beings known to Indians made the sites, and that their actions are explicable and understandable by contemporary Indians who follow traditional ways. Historic period sites are identified by tribal affiliations when they are known through oral histories.

From the academic perspective, it is clear that many different groups lived and hunted in southeast Montana during the pre-horse era. These groups were probably in contact with each other. It is most likely that they raided each other, traded with each other and occasionally intermarried. No doubt, they, like historic peoples of the area, shared ideas, hunting and gathering territories and some aspects of their spiritual beliefs. In the 1800s, for example, several groups of Lakota and Cheyenne camped in the Chalk Buttes area of southeast Montana. Here they hunted, gathered plant foods, held ceremonies, fasted, caught eagles, and engraved images into the sandstone at Medicine Rocks (CBEG, 1996).

Most of the data used to trace the migrations of the modern tribal groups is based on linguistics and oral histories. Nothing about language is recoverable from archaeological sites. Therefore, it is extremely difficult, if not impossible, to linguistically trace exactly the descendants of the people who made the pre-1700 AD spear and arrow points found in southeastern Montana. The arrow point makers may have spoken many different languages.

The identification of ancestral language groups in the Northern Plains before AD 1300 is itself a controversial topic. The debate centers on whether Algonkian or Athapascan speaking peoples first lived in the Northern Plains. One theory maintains that the peoples of the Northern Plains circa AD 1300 were exclusively Algonkian speakers who had migrated westward from the Great Lakes area. Contemporary Algonkian speakers include the Cheyenne, Arapaho, Blackfoot, Gros Ventre, Cree and Chippewa (Wood and Liberty, 1980:285-287).

A second theory asserts that Athapascan speakers, ancestors to the Apache and Navajo, were also on the Northern Plains before AD 1300, moving southward from Alaska and Canada. Kehoe (1981:133) asserts “a few Athapascan hunting bands ... moved south along the high plains just east of the Rocky Mountains. Some families remained in southern Alberta ... Others continued south into Montana and Wyoming.” Wright (1978:113) states that Athapascan speakers were in western Wyoming as early as AD 1100. Jennings (1974:315-316) postulates that nomadic Athapascan tribes continued southward, citing similarities between ceramics found on the Northern Plains and that of the Navajo in the Southwest.

It is not clear if the earliest residents of southeast Montana were Algonkian or Athapascan speakers. However, the Indian peoples that later moved into southeastern Montana surely met with, traded with, and intermarried with the earliest Indian residents of the area. In this sense, these early peoples are all ancestors of the historic tribes of the area. (cf., Wickman,1999).

II. Cultural Resource Protection Laws.

In addition to the Northern Cheyenne passing on their traditions to their children they rely on a series of cultural resource laws that can help them preserve localities and cultural resources associated with their heritage.

The National Environmental Policy Act (NEPA) became law in 1969. The Act created a decision-making process that requires evaluation of direct, indirect and cumulative impacts of a proposed project on the human environment. Environmental impacts associated with various alternatives must be assessed and environmental factors must be considered in the decision making process. Generally, NEPA documents address potential effects to cultural resources with reference to Section 106 of the National Historic Preservation Act (NHPA).

The NHPA established the National Register of Historic Places (NRHP) and the Advisory Council of Historic Preservation (ACHP) in order to protect properties which are significant to local, state or national prehistory, and to history, culture, architecture, technology and archaeology. The NHPA federal agencies identify, evaluate and protect properties that may be eligible for the NRHP before initiating any federal undertaking that may affect historic properties.

Sites, objects, districts and landscapes can be eligible to the NRHP in one of four ways:

1. association with events that have made a significant contribution to the broad patterns of history (criterion A);

2. association with a culturally significant individual (criterion B);

3. embodiment of the distinctive characteristics of a type, period, or method of construction (criterion C); or

4. the potential to yield important information about the history or prehistory of the area (criterion D).

In 1990, the National Park Service (NPS) issued Bulletin 38 which established guidelines for evaluating sites under criteria A, B and C from the perspectives of tribal history and culture. Sites, artifacts, landscapes and districts that qualify under criteria A, B or C from the perspective of Indian history and culture are called Traditional Cultural Properties (TCPs). A property demonstrates traditional cultural value if its significance to Native American beliefs, values and customs "has been ethnohistorically documented and if the site can be clearly defined." (Parker and King,1990:15-27).

Properties or natural features significant in the mythology, cosmology and history of a Native American group are potentially eligible to the NRHP. Also eligible are sites "where Native American religious practitioners have historically gone, and are known or thought to go today to perform ceremonial activities in accordance with traditional cultural rules of practice" (Parker and King, 1990:1).

Traditional cultural significance is also attributed to locations "where a community has traditionally carried out economic, artistic, or other cultural practices important in maintaining its historic identity." (Parker and King, 1990:1). Eligible TCPs are usually older than 50 years, qualitatively intact and recognized as culturally significant to the heritage of contemporary groups. (Deaver and Manning, 1991:6).

The following discussion of site types that may have religious or spiritual significance to the Northern Cheyenne excludes burials, graves or cemeteries. All graves have spiritual significance to the Northern Cheyenne. All should be shown respect, i.e., not be disturbed. It is offensive to refer to a person's final resting-place as a site, cultural resource or historic property. The Bureau of Indian Affairs (BIA) no longer records

graves as sites or cultural resources. Consequently, the BIA site files no longer contain a complete listing of graves found on the reservation.

Past work on the Northwestern Plains has demonstrated that there are several feature types that are commonly associated with traditional cultural practices and spiritual beliefs. Commonly, these feature types are described today as being "sacred" or culturally/spiritually significant. These include large cairns (2+ m diameter) (Deaver, 1986; Calder, 1977; Deaver and Deaver, 1988; Davis, 1976), pilgrimage/trail marker cairns (Deaver, 1993), vision quest or fasting structures (Conner, 1970, 1982; Deaver, 1986; Rood, 1988; Deaver and Kooistra, 1992), eagle trapping pits (Allen, 1981, 1983; Greiser and Greiser, 1984; Greiser et al., 1986; Howard, 1954; Wilson, 1928), Medicine Wheels, arrows, alignments, prayer lines (Brumley, 1986; Calder, 1977; Deaver, 1982; Dempsey, 1956; Kehoe, 1954; Kehoe and Kehoe, 1959) and very large and very small rings. (Deaver, 1985; Frison, 1983; Altamont, 1994).

The following site types, features, artifacts and site attributes, may have religious significance for the Northern Cheyenne:

1. large (numerous rings) ring sites which contain large diameter rings (indicating either the warrior society lodges associated with the New Life Lodge or Arrow Renewal, or the dance lodges associated with the Animal Dances);

2. isolated fasting beds, isolated poles with associated buffalo skulls on rugged, high altitude, isolated topographic features (indicating fasting activities);

3. rock art sites; and,

4. large diameter fasting structures associated with mass fasting experience, some of which take medicine wheel form.

Badhorse suggests that five rock art motifs have religious significance for both the Sioux and the Cheyenne — “man crawling with v-neck”, the lizard, the turtle, the circle with dot in the middle, and the bisected circle with a line extending outside the length of the radius. (1979:27). The human v-necked figure is symbolic of the New Life Lodge (c.f., Badhorse, 1979; Grinnell, 1972; Powell, 1969). Elder Bill Tallbull disagrees with this particular interpretation of motifs of the images. However, he also views rock art panels as having spiritual significance and meaning. The lizard is also associated with the New Life Lodge (Sun Dance) because the dancers often wear lizard paint and the lizard is reputed to have its own Sun Dance. (Powell, 1969; Grinnell, 1972; Badhorse, 1979). Current use of rock art and “medicine rock” sites for religious purposes is, on occasion, marked by offerings, primarily tobacco and calico flags left at these sites. (Badhorse,1979:21-22).

According to Northern Cheyenne traditional cultural experts, traditional cultural properties may include springs, ceremonial sites, and places where special plants and animals are found. According to Cheyenne theology, all things in the universe have spirits. This includes people, plants, animals, all types of water (rivers, creeks, springs, ground water and swamps), archaeological sites such as Deer Medicine Rocks and other aspects of the physical environment including the cardinal directions and rocks.

Section 106 of the NHPA stipulates that federal land managers, "prior to the issuance of any license. . . take into account the effect of the undertaking on any district, site, building, structure, or object that is included in the National Register." Compliance with the NHPA requires that federal land managers notify the ACHP of any proposed action that may affect eligible properties and provide the council "a reasonable opportunity to comment with regard to such undertaking." Although not mandatory, the preferred course of action is the protection of eligible sites.

The Archaeological Resources Protection Act (ARPA) of 1979 provides civil and criminal penalties for those who knowingly damage sites eligible to be included in the NRHP. Further section 4c of ARPA, states that prior to issuing any permit which "may result in harm to, or destruction of, any religious or cultural site, ... the federal land manager shall notify any Indian tribe which may consider the site as having religious or cultural importance." Notification under ARPA specifically applies to religious and cultural sites that are at least 100 years old.

The American Indian Religious Freedom Act (AIRFA), Pub. L. 95-341, acknowledges the rights of Native Americans to practice their traditional religions[1] and supports their "access to sites, use and possession of sacred objects, and the freedom to worship through ceremonials and traditional rites." American Indian Religious Freedom Act specifies consultation with the appropriate Native American groups when proposed activities have the potential to limit current religious practices, restrict access to culturally-valued resources, alter sacred sites or affect Indian burials.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990, Pub. L 101-106, regulates the treatment of unmarked Indian graves and human skeletal remains. It also sets up a mechanism whereby tribes may seek the return of skeletal materials, grave goods, sacred objects and articles of cultural patrimony from federally funded or regulated repositories. NAGPRA applies to graves on Federal lands. The state of Montana also protects unmarked graves. The Montana State burial

1 Many Indians dislike the term religion because, as it is commonly used, it implies that the spiritual aspects of life can be treated as being separate and distinct from other aspects of life. Separating the spiritual from other parts of life is contrary to the most basic precepts of much Indian belief.

law applies to state and private lands. In Montana, when human remains are found on non-federal lands, first the local coroner is called and then the State Burial Board. The State Burial Board is made up of tribal representatives, representatives of the State Historic Preservation Office, the State Coroners association, physical anthropologists and archaeologists.

Several executive orders are also applicable to the protection, preservation and management of cultural resources and sacred sites.

Executive Order 11593 (see NHPA § 110) directs federal agencies to provide leadership in preserving, restoring and maintaining the historic and cultural environment of the nation. It further directs these agencies to locate, inventory, and nominate to the NRHP all properties under their control that meet the criteria for nomination. It directs the agencies to ensure that cultural resources are not inadvertently damaged, destroyed or transferred before completion of the inventory and evaluation. The intent of this executive order has been integrated into the NHPA section 110 through the 1980 amendments.

Executive Order 12898 directs federal agencies to avoid differential project effects on poor or minority populations. This Executive Order is commonly called "Environmental Justice." In effect it states that NEPA analysis must take in to account the ethnicity, tribal status and socio-economic status of the populations affected by the proposed project. In terms of cultural resources, it means that avoiding the Oregon Trail, a TCP for Euro-American should not come at the expense of affecting a tribal TCP (Deaver and Fandrich, 1999).

Executive Order 13007 directs federal land managing agencies to accommodate access to sacred sites by traditional Indian practitioners and to protect those sites from impacts.

Presidential Proclamation of 29 April 1994 on Government to Government Relations with American Indian Tribal Governments directs federal agencies to conduct their relationship with federally recognized Indian tribes on a government to government basis.

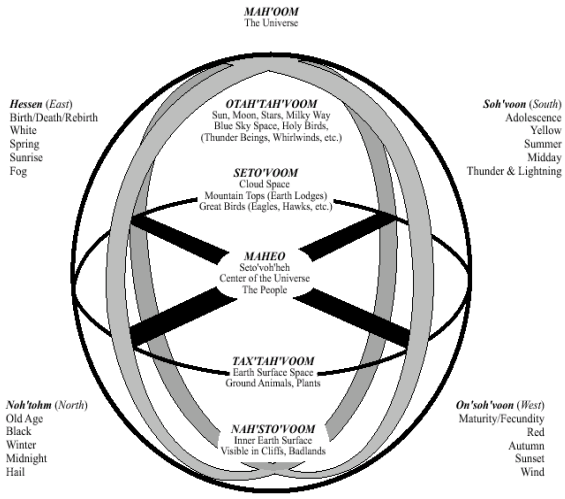
III. Cultural Importance of Natural Resources.

According to Cheyenne cosmology all things are related. People, land, water, animals as well as rocks, minerals and fossils all have a spiritual connection to each other. As a result the Northern Cheyenne use the term cultural site to include water resources, plant gathering areas, hunting areas, as well as mineral (paint) and fossil sources.

A. A Review of Cheyenne Cosmology.

To understand the cultural importance of natural resources to the Northern Cheyenne, one must first understand the Cheyenne cosmology. To review the basic Cheyenne cosmology discussed in Chapter 2, *Maheo*, the epitome of energy/spirituality, is contrasted with *Heestoz*, the symbol of substance/matter. Both are sacred and necessary for the continuation of the universe. Maleness and zenith, the highest point in the universe, are associated with *Maheo* just as femaleness and nadir, the lowest point in the universe, are associated with *Heestoz*. (The term *Heh'voom* is used when referring to the animate female principle.) These concepts are understood to be complimentary and balanced in the universe. At the same time that aspects of the *Maheo* like the Sun, grandfather to the Cheyenne, is associated with zenith, he is also understood to be everywhere. He is the creative expression of the universe, the spiritual essence of the universe. When the *Maheo* interacts with the earth (grandmother)—*Heh'voom* they bring about all life (Little Coyote, 3/3/02). Figure 7-1 below illustrates the basic structure of the universe.

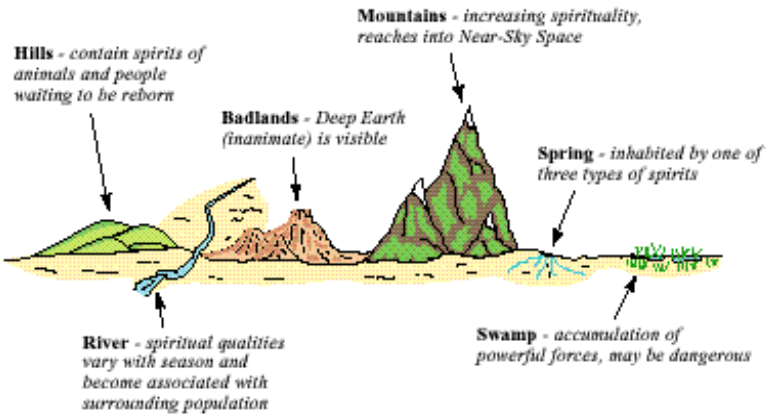
Between these two points there are several levels or spaces. These are the Blue-Sky Space (*Otah'ta'voom*), the Nearer-Sky Space (*Novah'voom*), the Atmosphere (*Tax'tah'voom*), the Earth-Surface Dome (*Matah'voom*) and Deep Earth (*Nah'stoh'voom*). The Blue-Sky Space contains the sacred manifestations of the *Maheo*, including the sun (grandfather), the night sun (the moon [mother]) and the Milky Way, which is the road to the land of the dead. The stars in the Blue-Sky Space are brothers and sisters of the Cheyenne. Those creatures, primarily the Great Birds (eagles, hawks, dragonflies and butterflies), that mediate between man and the sacred forces of the Blue-Sky Space, inhabit the Nearer-Sky Space. Nearer-Sky Space contains dust devils, clouds, birds, tornadoes and high places like mountaintops. Some Northern Cheyenne refer to mountain tops and hills as "earthlodges." These are natural landscape features that are "power points" or favored locations for fasting, praying and making offerings. They are favored because they are associated with increasing spirituality. "Earthlodges" reach into the *Setovoom* where the mediators (Eagles, Hawks, Dragonflies, Butterflies) between Maheo and humans live.



The Atmosphere is in direct contact with the Earth-Surface Dome. This is the area in which dust rises, objects can be thrown and insects fly. The Earth-Surface Dome is animate and extends to the roots of the prairie grasses. It is characterized by

living things that are useful to humans who derive their material and spiritual existence from this environmental setting.

Figure 7-2 below and to the left illustrates the basic cosmological qualities of visible topographic features in the Earth-Surface Dome. First, the earth's surface is animate. Hills contain the spirits of animals and people waiting to be reborn. Extinct species are those that *Maheo* does not allow to be reborn. The present increasing rate of extinction of species is explained by the fact that *Maheo* is withholding the animals in order to protect them from the destruction caused by the actions of industrial development. (Schlesier, 1986:4). Exposed cliffs or badlands are Deep Earth and are inanimate. Mountain tops and other high places are places of increasing spirituality because they reach the realm of Nearer-Sky Space. Surface water is alive, ever moving, and has spiritual qualities. Springs are the homes of spirits. Offerings are commonly left at springs today. For example, there is one on the divide between Birney and Lame Deer that the Birney people leave offerings at and clean up when it is polluted by vandalism (Washington, 1987 in Deaver, 1988). There are three varieties of spirits that live in springs. The first have short brown hair/fur like prairie dogs. The second type is white and furry. They do not want to associate with anyone. Thunder always strikes around them. People should not frequent springs associated with these spirits. The third type is black. These spirits/animals come out to pay their respects when ceremonies are held.



Deep Earth is dead/sterile earth; it is basically all substance and, hence, most female. It is visible to man in cliffs and in the badlands. It is characterized by being spiritually inert. Animals that live in caves and burrow into dead earth (bears and badgers) are considered female.

> While badgers and bears are important as symbols of the Deep Earth, buffaloes receive the most attention in all sorts of Cheyenne ceremonies and religious thought. Buffaloes live in great caves under the surface and they present themselves to be killed whenever *Maheo* wants to bless the Cheyenne...The Sacred Buffalo Hat...embodies the female principle as it relates to buffaloes. (Moore, 1979:3).

B. Water.

Springs, rivers, swamps and ground water are living beings with spirits. According to the 2001 Northern Cheyenne Reservation Survey on Traditional Economy and Subsistence, over 97% of the people believe that springs have spiritual value. Furthermore, over 90% recognize that water is very important to their social, economic and spiritual way of life. “The conceptual meaning of water to us would be the physical manifestation of the essence of life, of life itself, the fabric of life.” (Little Coyote, 1/8/02). The Sacred Buffalo Hat “came to us out of the waters” [of the Great Lakes Region]. (Little Coyote, 1/8/02).

The Northern Cheyenne communicate with these spirits. The ongoing traditional cultural importance of these water locations can be seen in the respect shown to these locations and in the offerings made at these locations. Routine archaeological survey on the reservation always takes into account water sources relative to the survey boundaries. A good contemporary example of this is the current widening of U.S. 212 east of Lame Deer. A survey documented the ongoing use of three springs for traditional cultural purposes and design changes were made to avoid affecting these properties/areas.

The Northern Cheyenne Natural Resources Department is conducting a survey of springs on the reservation. This work will include not only the physical characteristics of these springs but also their ongoing traditional cultural uses and the medicinal plants that are often associated with springs (Rollofson, 1/8/02, Appendix F).

Water is also associated with the turtle. The turtle is good to eat and is always associated with ceremonies. Some of the sweat lodges are patterned after the turtle and its longevity. These sweats are made for long life (Little Coyote, 1/6/02).

The traditional water drum is still used by the members of the Native American Church. “When you take those drums apart after ceremonial use, the breath of life comes out of them.” (Little Coyote, 1/6/02). Water drums must be taken apart after every ceremony. The water must be disposed of in a ritually specific fashion. (Little Coyote, 1/6/02).

Swamps are filled with many spirits and may be dangerous due to the accumulation of power at these localities. The Northern Cheyenne recognize the spiritual qualities of ground water also. There are special prayers for digging wells. Ground water represents the quiet nature of the earth. It should not be disturbed.

C. Plants.

Northern Cheyenne also regard the plants of the Earth-Surface Dome as relatives. Plants are living things with spirits. There are plant families, grandparent plants, mother and father plants, plant children and chief plants. Cheyenne children are taught that plant people require the same things as humans: fresh air and water.

Further they are taught to respect plants. People talk to plants, give them gifts and miss them when they have not seen them for awhile. A person may maintain a friendship with a particular tree throughout his life. This may include sacrificing his flesh to the tree. When trees are cut down or other vegetation wantonly destroyed, relatives are lost. The same dull aching of loneliness associated with the loss of a human relative is also experienced when a plant relative is destroyed. Chief plants are sought out for medicinal purposes. Personal names are taken from the spirits, birds, animals and plants that are sources of power in major Cheyenne ceremonies (Moore, 1984; Tallbull 1987 in Deaver, 1988).

There are many plants in current use by the Northern Cheyenne. Appendix F lists 170 plants with documented traditional cultural uses. There are a minimum of 81 separate ceremonial uses for these plants, 184 medicinal uses, 67 industrial uses and 94 subsistence uses.. According to the 2001 traditional economic and subsistence survey, 100 of 112 (89%) people reported gathering plants for food and over 84% (95 of 112) gathered plants for medicines or ceremonies.

Plants used on the south side of the Sun Dance include: cattails, man sage, June grass, red willow, chokecherry, ash, greasewood, purple corn flower root, baneberry root, cottonwood, swamp grass and sumac. Plants can be extremely powerful and must be used with caution. The pollution from Colstrip is making some plants unsafe and forcing plant collectors to go farther afield to collect their medicines and food plants. (Feeney, *et al*. 1986; Tallbull 1987 in Deaver, 1988). Each plant has special rules about its procurement and use. This is specialized knowledge available only to those who have the right to use these plants.

As noted above plant life has traditional ceremonial, medicinal, industrial and subsistence uses that remain important today. Today, box elder trees are used by the Northern Cheyenne for ceremonies. Juniper is used by the Northern Cheyenne to make flutes and charms with spiritual qualities and in ritual purification of females as they move into adult status. White Sage/Man Sage is used by the Northern Cheyenne to make the sacred bed for the *Mahuts* (Sacred Arrows). This sage is also critical to the Sun Dance and the Standing Against Thunder ceremony. It was preferred for purification purposes by Cheyenne Contraries. The purple cone flower is also used in the Northern Cheyenne Sun Dance. Incense of hairy golden aster is used to drive evil sprits from people and their homes.

In 1995, the Elders at the Chalk Buttes encampment collected cedar/juniper, purple cone flower and white sage. All are still in use for traditional cultural purposes (CBEG, 1996).

Traditional food plants found in the area include Ponderosa pine, chokecherry, golden current, box elder, sand cherry, spring lily and wild tuberose. Traditional foods are an important symbol of ethnic identity. At the Chalk Buttes Traditional Elders encampment, when Elder Bill Tallbull returned to camp after his vision quest, the menu

included dry meat and antelope soups. If it had been fall, chokecherries or other local fruits would have been collected and served.

Northern Cheyenne horse medicines present in the Chalk Buttes area and used historically include scurfpea and yucca. Chalk Buttes area plants also include penstemon used as a blue dye; yucca used as shampoo; juniper used to make bows; currant wood used to make both pipestems and bows; scurfpea to make baskets; and chokecherry wood used for tipi stakes, closure pins, bows, firewood, root digging sticks and shinny ball sticks. The Northern Cheyenne and Sioux smoked sumac found in the area.

Medicinal use of plants continues to be important to the Northern Cheyenne. For example, they use goldenrod as a general medicine; hairy golden aster as a relaxant and general tonic; alumroot to treat diarrhea, arthritis, rheumatism and sore muscles; scurfpea to treat fever; juniper to manage respiratory and reproductive problems; purple cone flower leaves and roots to treat mouth sores, toothaches, rheumatism, arthritis, mumps, measles, and when mixed with Blazing Star, smallpox; rabbitbrush to treat smallpox and when mixed with sage to treat colds, coughs and tuberculosis; sage alone to treat sinus problems, nosebleeds and headache; and wild onion to treat carbuncles. (CBEG, 1996).

Medicinal plants collected during the 1995 Chalk Buttes Elders encampment include purple cone flower and curlycup gum weed, an introduced species found on almost all road cuts in the area and used to treat poison ivy. (CBEG,1996).

D. Animals.

Animals live on the Earth-Surface Dome. In Cheyenne biological taxonomy, animals include birds, ground animals, crawling animals and water animals. The class *zeevasoheva*, ground animals, which inhabits the Earth-Surface Dome includes *hovan*, which basically translates as mammals; and humans, *votostotaneo*. Mammals are divided between predators/those who paint (wolf, coyote and bear); game/those who do not paint (antelope, deer, elk and buffalo); and small animals who paint (lizards). In the distant past, those who paint and man were on the same side in a great race. Those who lost the race became the food source of those who won the race. People regard animals as relatives. A person may get more support from his animal relatives than from his biological relatives. It just depends on the person.

Game animals as well as predators have ceremonial functions. The lower leg bone of antelope is used for pipes used in the Sun Dance. The hooves are used for dance rattles, and medicine taken from antelope throats is used to give speed to messengers. The lining of a deer esophagus is necessary for the last day of the Sun Dance as are mule deer tails. Deer medicine also gives long wind and the ability to move quickly.

Pronghorn antelope are also a source of food. Traditional foods are still important in the Northern Cheyenne diet and in their ceremonial life. In addition, many people are emphasizing a return to a traditional diet as a way to overcome current health issues (e.g., high diabetes rate) on the reservation (Little Coyote, 2001). Antelope hides and bones are also used to make everyday household items. In addition they have ceremonial functions. The Northern Cheyenne use the leg of the antelope for the Sun Dance pipe and the hoof for the Sun Dance rattle. The Northern Cheyenne also use the windpipe of the antelope as a medicine to increase speed. At the 1995 Chalk Buttes Traditional Cultural Elder encampment, antelope soup was served at the ceremonial meal welcoming Mr. Tallbull back to the community after his vision quest.

The buffalo, in addition to being the major food source, also provided hides and bones for industrial uses. In addition, the buffalo is a pivotal symbol of the Cheyenne ethnic identity as Indians. The Northern Cheyenne regard the buffalo as a powerful spirit. Buffalo skulls, hides, and tails continue to be used in ceremonies. A buffalo robe was used during a blessing ceremony at the Chalk Buttes encampment.

Today people hunt both on and off reservation. The most common large game taken is deer followed by elk. Dry meat remains important in the diet and the sharing of meat is still an important social obligation that is honored by over 67% of the people surveyed in 2001. People not only share meat with relatives but also with tribal elders and others who need meat. Seventy-six percent of the people who hunt and gather report praying or offering ceremony before and/or after hunting. In addition 76% use parts of animals or birds for ceremonial or social purposes.

E. Great Birds.

Both prairie falcons and red-tailed hawks are classed as Great Birds in Cheyenne biological taxonomy. This means they live in the Nearer-Sky-Space and serve as messengers between men of the Earth-Surface Dome and the Spirit Beings in the Blue-Sky Space (Moore, 1986:183). These birds are used as cancer medicine today. (Tallbull 1987 in Deaver, 1988).

Eagles and hawks as well as being spiritual mediators for the Northern Cheyenne are also recognized as sacred. Eagle feathers and bones are used as ritual items. Prairie falcons and red-tailed hawks are also sources of cancer medicine for the Northern Cheyenne. One individual reported hunting hawks during the 2001 survey year.

F. Fish.

"Fish are used for food offerings. Fish oil was used for lamps and was an important part of the diet from when we were in the Great Lakes Region. My grandmother used to feed the fish. She would fix a plate for them and take it to the river" (Little Coyote, 1/8/02). According to the 2001 Northern Cheyenne Reservation Survey of Economic and Subsistence activities, 60% (67 of 112) of the people interviewed reported fishing.

G. Minerals (paint sources and fossil sources).

Fossil and mineral resources are also important in maintaining traditional cultural practices (Tallbull and Deaver, 1991; CBEG, 1996, Peterson *et al*.,1995). In 2001 93 of 113 people (74%) reported gathering clays/pigments. The Tongue River Valley region contains white and black paint sources used today for ceremonial purposes. (Tallbull and Deaver, 1991; Wise, 1/6/02). The Chalk Buttes area contains a blue paint source still used for traditional cultural purposes. (CBEG, 1996). Additionally there is a buffalo stone source on BLM lands in southeast Montana, where traditional cultural specialists still go to collect these effigy figures. (CBEG, 1996). According to Grinnell the early name for Muddy Creek was *Hiyo'vuni'yohe* (Yellowpaint River). (Grinnell, 1906:19).

IV. Cultural and Archaeological Sites on the Reservation

The following description is based on a 2002 compilation of all site forms on file at the BIA, GLO plat map data and a review of all of the compliance cultural resource management reports filed on Northern Cheyenne Reservation lands up to February 2002.[2] It covers only those resources and sites that have been formally recorded (approximately 700). The Northern Cheyenne do not classify graves as sites, cultural resources or historic properties. The BIA no longer records graves as sites. Consequently this compilation does not include all burial localities known on the reservation. There are many other cultural properties on the Reservation that have not been formally recorded.

A. Graves, Burials and Cemeteries.

There are a minimum of 65 known locations where people have been buried on reservation lands. Many of these locations are the final resting-place of several individuals. All graves are accorded respect by the Northern Cheyenne. None should be disturbed. People visit graves to pray and make offerings. Traditionally, the Northern Cheyenne view death as a process rather than an event. Death marks the

[2] This is the first compilation of the cultural resource data for the Northern Cheyenne reservation. It brings together information from numerous limited distribution technical reports. Since this information is difficult to access and is not available in any single source, all of reviewed technical reports are listed in Chapter 8 even though they are not directly cited in the text. This will allow future work in this area to start from the 2002 baseline.

separation of the spirit from the body but the spirit/the person remains a part of the Northern Cheyenne Community. (Strauss, 1978). Consequently, the respect shown to graves is part of the respect shown to spiritual beings.

B. Ceremonial Sites.

Forty-eight cultural resources have been recorded which have ceremonial functions. The recorded ceremonial sites include vision questing/fasting sites, sweat lodges, memorials such the Head Chief/Young Mule Fight Site and a stone memorial to a CCC worker who was killed while working on a reservation project. Other ceremonial sites are locations (trees, springs, rock art, rivers, etc.) where offerings were/are made, Medicine Bundle opening locations, a Medicine Wheel, Sundance Lodges, Piercing Trees, Mennonite and Catholic churches and missions, Peyote Meeting locations and Ghost Dance locations. The diversity of ceremonial sites reflects the complex theological history of the Northern Cheyenne.

Preferred localities for fasts are high and isolated, cliffs, hills or buttes. Physical features associated with the Cheyenne fasting sites are the preparatory sweat lodges, fasting beds—low rock structures, usually open to the east, and/or stripped poles with an associated buffalo skull, rock art and medicine wheels. According to John Stands-In-Timber, many men who went out to fast for power would draw pictographs of their visions—the Sioux Chief Crazy Horse made one on Reno Creek after the Custer Battle. (Stands-In-Timber and Liberty, 1967:104). The usual practice was/is for men to go out alone to fast. However, group fasts have been reported. Both the Crow and the Cheyenne interpret the Bighorn Medicine Wheel as resulting from group fasts. (Deaver ,1982a, 1982b; Stands-In-Timber and Liberty, 1967; Medicine Crow, n.d.).

> On the Northern Cheyenne reservation...there is a large site about 10 feet in diameter and about 3 feet high where it has been related that seven Cheyenne men fasted simultaneously. This multiple fasting practice seems to suggest that the famed Medicine Wheel on the Big Horn Mountains...was perhaps originally structured as a mass fasting place...(Medicine Crow, n.d.).

The results of a successful fast for the Cheyenne include the accumulation and continuing use of the personal medicine bundle.

Unrecorded ceremonial sites (for example, umbilical cord trees and medicine bundle locations) probably far out number the 48 formally recorded ceremonial sites. These sites are private and accorded respect. Respect includes not talking about them to non-participants in the ceremonies. Further, many of these sites were used during periods when traditional ceremonies were suppressed by the U.S. government. Consequently, people are extremely reticent to share such information with non-Cheyenne.

C. Homes.

A wide variety of residences have been recorded as cultural resources on the reservation. Seventy-six sites, including tipi rings, historic depressions, foundations, cabins associated with homesteading, allotments and the development of reservation communities have been recorded. Many of these resources contain multiple homes. For example, 24RB1846 contains 18 tipi rings in addition to other stone structures, tool making debris and a hearth. Two historic residential districts have been recorded, one in Lame Deer and one in Indian Birney. Both contain many homes. Corrals, sheds and other outbuildings have also been recorded at the homesteading era sites. The General Land Office plat maps and the allotment files of the BIA also show the location of other home sites that have not been formally recorded.

D. Community and Commercial Reservation Era Sites.

Nineteen historic resources that date from the Reservation era and serve community or commercial functions have been recorded on the reservation. Some are one-time residences that were recycled to serve community functions such as the "Detox House" and teachers cottages. Others are associated with the Agency (BIA) offices and tribal governmental offices. Also included in this category is a possible Forest Service fire watch structure, irrigation ditches, historic small scale (family) coal mines, small scale diversion dams, historic petroglyphs (incised images on stone), the Tongue River Lumber Company Mill and the historic Busby wooden tipi structure. The Busby Tipi was used as a general store and a dance hall. It has been determined to be eligible for the National Register of Historic Places.

E. Military and Exploration Related Sites.

Thirteen sites associated with Euro-American exploration, road building and military actions in the 1870-90s have been recorded. These include historic graffiti and camp sites associated with the First Cavalry, two camp sites of the 1874 Yellowstone Wagon and Prospecting Expedition, two sites associated with Camp Wesley Merrit and the Tongue River Agency, the wagon road to Fort Custer and the Lame Deer/Miles Fight site.

F. Archaeological/Prehistoric Sites.

The vast majority of the cultural resources recorded on the Northern Cheyenne Reservation are made up of either stone tools and tool making debris (lithic scatters) or stone piles generally referred to as cairns.

Lithic scatters are by far the most common site type on the reservation. Four hundred twenty-four (424) have been recorded as of February 2002. At least 12 are associated with springs. Most only contain stone tool making debris, a few contain fire-broken rock and still fewer include non-human bone fragments. Most of the stone

material used by the prehistoric and historic inhabitants of the area was porcellanite that commonly outcrops in the area. Consequently, many lithic scatters include evidence of quarrying and the initial processing of porcellanite.

Most of these sites are only known from survey data and consequently it is difficult to say during which era(s) they were used. Thirty arrow/spearheads that can be used to estimate the dates of occupation have been reported from the surface of these sites. The area has been inhabited since the Paleo-Indian Period (circa 12,000 years ago) through the Middle Period and the Late Prehistoric (ending approximately at 1750 AD).

Some cairn sites contain only one stone pile while others contain many. Cairns co-occur with tipi rings and lithic scatters. They vary widely in size and have many different functions. Cairns may mark trails or locations where specific events took place. They may be trash or site clearing piles; they may result from the building of tipi rings or sweat lodges. They can also have ceremonial functions when they are the result of people leaving offerings. Cairns sometimes mark human remains. Generally, the larger the cairn and the higher its profile (its height as measure from ground surface) the more likely it is to represent ceremonial activities or cover human remains.

When cairns form linear arrangements they are called alignments. Alignment cairns are most often small and have a low profile. Generally alignments are directional markers/prayer lines associated with major ceremonial sites such as the Big Horn Medicine Wheel or drive lines, lines of stone used by groups of hunters to mark the routes on the prairie where they wanted to channel their prey (deer, antelope and bison). One alignment has been recorded on the reservation.

Fifty-four (54) sites containing cairns that are not associated with tipi rings or alignments have been recorded on the reservation. About 30% of these have associated stone tool making debris. One is associated with a location that has both prehistoric and historic rock art. On most site forms, the size of the cairns and their profile is not described therefore it is impossible to state how many have ceremonial functions. One exception to this is the very large cairn at 24RB1789.

Since cairns may mark human remains or memorialize spiritual/ceremonial activities, the Northern Cheyenne routinely avoid these sites.

Other sites found on the reservation include the Black Eagle Buffalo Jump and associated petroglyphs, a location with fragmentary large mammal bone and one flake, four rock art (petroglyph) sites and one rock shelter which contains lithic debris.

V. Off–Reservation Cultural and Archaeological Resources Significant to the Northern Cheyenne.

With the creation of reservations in the late 1800s and early 1900s, tribal territories became set in a legalistic sense. However, this does not mean that the Indians thought that lands outside the reservation boundaries were no longer important or significant. Since 1983, over 20 Indian groups have rejected Indian Court of Claims and the U.S. Court of Claims awards because they are still trying to regain their traditional lands as opposed to the monetary settlements offered by the U.S. government. (Jorgensen, 1984:17).

Many of the most bitterly fought claims deal with lands with sacred attributes. The disputes of Yellow Thunder Camp in the Black Hills and the Northern Cheyenne's attempts to preserve the sanctity of Bear Butte illustrate this. (FATA, 1979; Josephy, 1984; McCool, 1981; Michaelsen, 1983; Talbot, 1985).

The continuing significance of Bear Butte in South Dakota to the Cheyenne is best expressed by the following description of Cheyenne pilgrimages to that locality.

> Today, Cheyenne pilgrims climbing *Nowah'wus* see the marks of the past all around them. Circles of rock form the tipi rings of older camp sites. An eagle-catching pit is near. High on the butte itself, that great bird so close to Thunder still nests. Circling above the stone heights he watches the fasters below. A spring marks the place from which the people gather blue clay to make the sky color used in decorating the rawhide parfleches. And to the southwest lies the spot where the Buffalo People themselves first gave the Suhtaio the Sacred Medicine Lodge, the Sun Dance...This is the heart of the Cheyenne sacred places and sacred ways. This is where the All Father and the Sacred Powers themselves gave Sweet Medicine the four Sacred Arrows. (Powell, 1969:19).

The Northern Cheyenne Tribe has purchased 560 acres near Bear Butte State Park to preserve their access to this sacred site. (Little Coyote, 2001:11).

Off-reservation Northern Cheyenne ceremonially significant sites in or near southeast Montana include: Lake De Smet (near Buffalo, WY, [Tallbull and Deaver, 1991; White Frog 1950 in Little Coyote, 2001]), Bear Butte, Deer Medicine Rocks (a rock art site associated with Sitting Bull's vision prior to the battle of the Little Big Horn), Little Bighorn National Battlefield, Medicine Rocks located on the southern border of the reservation (the site of pre-reservation Sun Dances including the last Sun Dance prior to the battle of the Little Bighorn) and Medicine Rock Site located at Cave Hills, (SD). At the Medicine Rock Site in South Dakota, pictographs change to foretell events.

(Deaver, 1986:58). Chalk Buttes and the nearby Medicine Rocks State Park are also the site of ongoing traditional cultural activities by the Northern Cheyenne. (CBEG, 1996; Tallbull *et al*., 1996). All of these locations are the focus of individual pilgrimage and prayer today.

The preceding discussion summarizes some of the best known off-reservation sites that have continuing significance to the Northern Cheyenne. It is not exhaustive. It includes only the well-documented high profile sites in the immediate area. Future work in the area will no doubt document other off-reservation sites with traditional cultural significance for the Northern Cheyenne. In the context of proposed CBM development, standard cultural resource surveys will have to evaluate sites in terms of their potential traditional cultural significance under National Register criteria A, B and C as well as criterion D or scientific value.

BLM management decisions to develop land traditionally used by the Northern Cheyenne may adversely affect their access to, or utilization of, areas for ceremonial and cultural activities. For example, the construction of roads for coal bed methane development may increase accessibility to remote areas, which have been used for prayer and fasting activities. Seclusion is required for these activities. Conversely, construction of new roads can provide easier access to traditional plant gathering areas. Construction of fences may restrict the collection of plants for medicinal purposes and mineral resources used in ceremonies by religious practitioners while protecting them from damage by unrestricted recreational use. Increased noise levels associated with some development activities can make areas unsuitable for fasting, prayer and making offerings. The modification of landforms by construction activities required by oil and gas development can also affect Native American practices and values by interfering with the respectful treatment of dead and spiritual aspects of the environment.

Sites associated with the Northern Cheyenne history and ongoing traditional use in southeast Montana are also found within the management boundaries of the Custer National Forest. These are summarized in the next section. Again, this list is not exhaustive. It is only as complete as the survey and consultation work has been up to January 2002. Further work in the Custer National Forest will document other sites with traditional cultural significance to the Northern Cheyenne.

The early Cheyenne Homesteads east of the Tongue River have ongoing significance to the Northern Cheyenne. They are associated with a pivotal event (establishment of the Tongue River Reservation) in Northern Cheyenne history. Further, they may be important due to their association with important individuals in Northern Cheyenne history. See Appendix G for the location of the homesteads on the Otter, Hanging Woman and Tongue drainages and a list of the individuals and families associated with these homesteads.

A. Cultural Resources in the Custer National Forest (CNF) and Vicinity.

The following discussion focuses on the Beartooth and Ashland districts of the Custer National Forest and adjoining lands in the vicinity. Both of these districts include lands under consideration for coal bed methane development in southeast Montana. This discussion relies heavily on a cultural resource overview of the CNF completed in 1995 (Deaver and Kooistra-Manning,1995).

The Northern Cheyenne have several specific ongoing concerns about the management of the Ashland Unit of the Custer National Forest and the cumulative impacts of this management on their contemporary traditional cultural uses of this area. As more and more development occurs in the Powder River region, the Northern Cheyenne will have fewer and fewer undisturbed places to go to collect ceremonially significant pigments and plants. Increasing the ease of access to the medicinal plants across from Birney, in the Poker Jim area, and protecting medicinal plants in Section 27, T5S R43E (Tallbull and Deaver, 1991), are major concerns for the Tribe.

The area immediately east of the Tongue River is extremely important to the Northern Cheyenne (Tallbull and Deaver, 1991) because it is the location of 46 early Northern Cheyenne homesteads that predate the creation of the reservation. These homesites contain burials, sweat lodges and other spiritually important features as well as the remains of the homes. Protection of known burials including that of Red Hat (Tallbull and Deaver, 1991), and the grave of an old medicine woman[3] is particularly important.

By 1995, four burial sites had been recorded on Forest Service lands in the Ashland District. The first grave was a box burial with trade beads and bell inside. Transported cobbles were found in association with the second burial site. The third site contained human skeletal remains that had most likely washed down into the gully where they were found. A mound site with lithics may indicate a fourth burial site.

Burials occur in Hammond Draw and along Otter Creek (Lahren, 1977; Deaver, 1988; PA, 1980). A site form for a lithic scatter near the Tongue River, immediately adjacent to CNF lands, also mentioned a burial site. Local residents reported that the burial had been potted and a catlinite pipe removed. The specific location of the burial site and land ownership were not ascertained by the archaeologists who surveyed the area. Burials in Hammond Draw, Otter Creek and the Tongue River may be impacted by increased access to the area due to development.

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[3] According to the Northern Cheyenne, avoidance of the graves of medicine people (religious specialists) is mandatory and no other option is thinkable and would, in fact, be dangerous to even discuss. If graves of ordinary people cannot be avoided or are inadvertently disturbed, qualified religious specialists, designated by the Northern Cheyenne Culture Commission, pray and communicate with the spirits of the dead, apologizing for disturbing them and then preside over their reburial. Reburial is not an option when dealing with the graves of medicine people. It is too dangerous.

As of 1995, there were 17 rock art sites positively identified in the Ashland District and one in a cave on private land within the district boundaries. They are found on cliff faces, sandstone pillars and in caves. All are petroglyphs and motifs which include animals, bear tracks, images of tipis, anthropomorphs, shield bearing warriors and geometric figures. (Deaver and Kooistra Manning, 1995).

In 1995, 11 of the 14 ring sites recorded in the Ashland District may contain rings with interior diameters of 7+ m. One site, 24PR1038, has a ring with a 30 ft diameter. Another site, 24PR1077, has rings that range from 18-30 ft in diameter. Beckes and Keyser (1983:453) note that 24PR0608 consists of seven large rings, which may include ceremonial-sized rings. According to site form 24PR0602, informants reported that a Cheyenne Elder frequented a stone ring on CNF lands (24PR1039). The ring is located near an unrecorded cairn site and an eagle catching pit within the Ashland District. There have also been local reports of tipi rings in the Griffin Pass area.

Deaver and Kooistra-Manning also note four ring sites outside of the Ashland District boundaries. Three of these sites (24PR0563, 24PR0597 and 24PR1045) have ceremonial-sized rings. (PA, 1980:np). The dimensions of the fourth are not specified (Mineral Research Center, nd:24). These sites are near CNF access routes and impacts to them should also be considered in land management decisions. A 30-ft stone arc is located atop a ridge at Site 24PR1058. The site also indicates a large cairn.

As of 1995, there were eight sites with cairns of unknown sensitivity in the Ashland District. A few sites contained large cairns or cairns associated with a burial. A 20-ft diameter cairn was found at 24PR1038 in conjunction with a large 30-ft stone arc. At Site 24RB0394, cairns were found around a box burial. Also, at a site near Otter Creek, 24PR0155, there was evidence that one of two cairns had been disturbed and then reconstructed. Two large cairns, with diameters of 8 to 9 ft, were recorded at Site 24PR1048, located on a narrow strip of private land within the Ashland District.

A concentration of cairn sites on private lands outside CNF near Otter Creek may be significant in terms of identifying sensitive areas within the Ashland District along the same drainage. According to site form 24PR0602, one informant noted an Indian trail marked by cairns along Otter Creek. “One pile was located near Stag Rock and another is still above the Cow Creek-Otter Creek Road junction.” (Hagen, 7/4/70 in Deaver and Kooistra-Manning, 1995). Further, Tate and Karsmizki (1990:9) maintain that stone piles or cairns, mark an old Indian trail which began at the Tongue River, ran down Otter Creek and Indian Creek, and then on eastward.

By 1995, three fasting sites had been identified in the Ashland District. One more possible fasting site is located on CNF/privately owned lands, two on private lands within the district boundaries and two on private land immediately adjacent to the district. These fasting sites consist of small circular structures composed of stacked rocks. One of the structures on CNF lands, 24PR0991, may be of historic construction

and use. Beckes and Keyser (1983:480) suggest that the petroglyph location, 24RB1076, may also be a fasting site.

Site form 24PR1171 indicates three rock structures on the western rim of a hill overlooking the West Fork of Little Pumpkin Creek. The site map, however, indicates three circular structures and one U-shaped structure on the landform.

There are three possible eagle catching pit sites on CNF lands and one on private land within the Ashland District boundaries. Beckes and Keyser (1983:469) include possible eagle catching pits in the description of fasting Site 24PR1171. An eagle roost was also noted in Section 18, T4S R46E

Site 24PR1301 contains a ring with a diameter of 2.5 m. It may be the remains of a sweat lodge or a small living structure. A fork of Ash Creek originates in the northern half of the section, and a spring is located in the extreme southwest corner. Access to water may be relevant in determining the activity associated with such a small ring in this rugged area. The site could also be associated with the spirits inhabiting the spring.

As of 1995, there were no medicine wheels, Sun Dance lodges nor historic battle sites recorded in the Ashland District. However, log structure, rock alignment and bison jump sites may have potential traditional cultural value. Archaeologists speculate that cribbed log structures found in the northern plains may have been war lodges, habitation structures or corrals. (Loendorf, 1969:150). Excluding two historic Euro-American log structures, there are five log structure sites which may be related to Native American use or activities. There are also two recorded bison jump sites in the Ashland District, Sites 24PR1032 and 24RB1121. Bison kills are regarded as having heritage significance by all of the tribes in the area.

Archaeologists have identified a plant collection site (24ST0651, Section 2, T7S R16E) in the non-wilderness region of the Beartooth Unit. The foothills of the Pryors near Warren are known to the Northern Cheyenne as an important plant gathering area. The plants in this area are reported to be particularly hardy and, therefore, are stronger medicine. Basin-like vegetation associations characterize this area. Consequently, a different set of plants is available here than is available in the prairie and mountain habitats of southeast Montana. Deaver and Fandrich (1999) have also documented the continuing Northern Cheyenne interest in the medicine plants of this area.

There is only one potential burial site recorded in the Beartooth District. Possible burial cairns are located on a site near East Pryor Mountain in the Pryor Mountain Unit. Site 24CB0608 contains possible burial cairns. According to Loendorf (1967:55) and State Historical Preservation Office (SHPO) site records, there is also a burial on private lands immediately adjacent to the Beartooth Unit. Site 24CB0465 contains a large cairn with smaller cairns radiating from it. Beads on a copper wire ring have been recorded from this site. They may represent an offering. This configuration of cairns

may also be a type of medicine wheel associated with the burial of particularly important individuals. (Brumley, 1986).

There are no rock art sites recorded in the Beartooth District. However, Loendorf reported several petroglyph sites on BIA (Loendorf, 1967:56) and BLM (Loendorf, 1969:139-144) lands in the Pryor Mountains. This suggests that rock art sites probably exist within the Pryor Mountain Unit of Beartooth District as well. N. C. Nelson also recorded pictographs in the Pryors. (Beckes and Keyser, 1983:312).

Two ring sites have been identified on CNF lands in the Beartooth District. Because the number of rings and ring dimensions are not specified, these sites may have rings with interior diameters of 7+ m.

Five sites containing cairns have been recorded in the Beartooth District. Loendorf (1967:56) reported two cairn sites on private lands immediately adjacent to CNF. A unique cairn configuration at Site 24CB0736 on BLM lands immediately south of the border of the Pryor Mountain Unit is also possibly culturally sensitive.

In 1995, Deaver and Kooistra-Manning listed the traditional cultural concerns documented for the Custer National Forest. In the Ashland Ranger District, they include:

1. Respectful treatment of burials (all tribes);

2. Maintain access for mineral (paint pigment) gathering (Northern Cheyenne);

3. Ease access to plant gathering sites (Northern Cheyenne); and

4. Respectful treatment of Traditional Cultural Properties especially historic Northern Cheyenne homesteads, fasting areas and rock art sites.

Similar concerns were enumerated for the Beartooth Ranger District:

1. Respectful treatment of burials (all tribes);

2. Maintain access for plant gathering (including tipi poles) particularly in the Pryor Mountain Unit (Crow) and especially at the foothills of the Pryors around Warren, Montana (Northern Cheyenne);

3. Maintain and increase access for mineral resource gathering, such as soapstone and paint pigment (Eastern Shoshone); and

4. Respectful treatment of Traditional Cultural Properties especially Sun Dance grounds, fasting sites, rock art sites and medicine wheels (all tribes).

5. Respectful treatment of hunting, fishing and root gathering sites. (Shoshone-Bannock).

B. Cultural Resources of the Tongue River Valley.

The Northern Cheyenne recognize the spiritual nature of water. (Deaver, 1988:29-30). Rivers have spiritual qualities that become associated with the people who live around them. All surface waters are alive, ever moving, and are life giving. Three kinds of spirits live in springs. Swamps are filled with many spirits and may be dangerous due to the accumulation of power at these localities. Ground water represents the quiet nature of the earth and should not be disturbed.

There is a spiritual and cultural tie between the Northern Cheyenne and the Tongue River. (Deaver and Tallbull, 1988:9-10). Offerings of cloth and tobacco are made to the Tongue River. Important ceremonial events, such as fasts, sweats and the Sun Dance, Sacred Hat and Ghost Dance ceremonies, have been performed in the Tongue River valley. (Stands In Timber and Liberty, 1972; Marquis, 1978; Murray, 1974; NCPO, 1981a). Ceremonial locales have spirits who remain in place and must be treated with respect. (Deaver and Tallbull, 1991:8).

In 1990, when the Tribe was considering test well locations in Section 24 T5S, R42 east, Birney Community members and the Culture Committee expressed concerns about damage to the spiritual qualities of the area. In this area, the cottonwood grove along the Tongue River floodplain was used as a camp from at least the 1800s until 1930. Religious ceremonies, including the annual renewal of the medicine bundles took place at this camp. (Keller, 1990d:1)

An issue raised by George Elkshoulder, and previously by Bill Tallbull, is the concern that exploration for methane gas may be in opposition with general religious principles that call for respect of the land. More importantly the exploitation may be in direct conflict with direction received in an Arrow Ceremony to avoid coal development on the Reservation. Because the methane gas is associated with coal seams, any drilling through these seams to extract or even test the gas could be considered a violation of this direction. (Keller, 1990d:2-3).

The people of Birney Village, one of the most traditional settlements on the reservation, acknowledge a close relationship with the Tongue River. They pray to the east and fast in the hills overlooking the Tongue River. Birney Village residents use the river for watering horses, watering gardens and washing hides. Basic wild food plants are dependent on this water source. Medicinal and ceremonial plants are collected along the banks of the river. (Deaver and Tallbull, 1991:9-10).

Since the Tongue River valley has been home to the Northern Cheyenne since at least early historic times, the people have developed a relationship with the river and the valley in terms of everyday activities, as well as in a spiritual context.

“Grandmothers ensure that babies born away from the reservation will know their home by hanging part of the child’s afterbirth from a tree near the river.” (Deaver and Tallbull, 1988).

The Northern Cheyenne value the Tongue River valley because of the vegetation and wildlife it sustains. The wild plants and animals of the Tongue River region continue to contribute to Northern Cheyenne subsistence. About 57% of Birney residents and 84% of Ashland residents supplement their income by hunting, fishing, and gathering wild plants and herbs. (NCPO, 1981b:91). These subsistence sources remain important today. (Little Coyote, 2001). Some of the edible plants collected along the Tongue River include chokecherries, currants, ground plums, mushrooms, prickly pear, rose hips, sage, scurfpea, snowberries, sunflowers, wild mint, and wild turnips. Supplemental food sources in the Tongue River valley include antelope, deer, elk, rabbit, duck, goose, grouse, pheasant, catfish and northern pike. Income from selling the pelts of badger, beaver, coyote and river otter is also important to the economic base of Northern Cheyenne living along the Tongue River. (NCPO, 1981a:13).

Plants of the Tongue River region are also valued by the Northern Cheyenne for their medicinal properties. Some of the plants currently used by the Northern Cheyenne for medicinal purposes include big sage, chokecherry, common sage, curlycup gumweed, dandelion, globe mallow, golden aster, goldenrod, juniper, lichen, manroot, milkvetch, phlox, plantain, rabbitbrush, ragweed, scurfpea, sunflower, sweet medicine, white sage, wild mint, wild rose, willow, yarrow and yucca. Big Medicine, a rare and important medicinal root, is collected along the east side of the river, as well as along Poker Jim Creek. (Strange Owl, 1986 in Deaver and Tallbull, 1988; Deaver and Tallbull, 1991; Stands In Timber and Liberty, 1972:109). These plants can be extremely powerful and must be used with caution. Each plant has special rules concerning its procurement and use. This is specialized knowledge available only to those who have the right to use these plants. (Deaver and Tallbull, 1988).

The plants and animals of the Tongue River valley have spiritual significance for the Northern Cheyenne. For example, Moore (1979:2) noted that the Northern Cheyenne consider cottonwood trees sacred because their roots extend into the Deep Earth from the Earth-Surface Dome. The valley is also home to eagles, go-betweens between the people of the valley and the Blue-Sky space. (Tallbull and Deaver, 1991:10).

The Tongue River region also retains a critical cultural significance for the Northern Cheyenne as a sanctuary and homeland. During the late 1800s, the Northern Cheyenne came very close to extinction. The Tongue River area was their last refuge and is still recognized as the place where they were able to survive and come together as a people. The reservation is viewed as a last sanctuary where the Northern Cheyenne could retain their unique cultural identity. Consequently, protecting the environmental surroundings of the Reservation is viewed not only as a spiritual

responsibility but also as being necessary to ensure the survival of the Northern Cheyenne as a people. (Deaver and Tallbull, 1991:9).

Not only do the Northern Cheyenne have an ongoing spiritual relationship with the plants and animals growing along the Tongue River and the river itself; they recognize spirit persons who inhabit the valley. These spirits must be treated with respect. They can take different forms (human, animal and light) when they appear to people. Some spirits are benevolent while others are dangerous.

Particular spirits live in springs in the Tongue River valley (Deaver and Tallbull, 1988):

> ... certain springs have certain spirits in them. Like you go to Birney and see all the offerings hanging there. Their life depends on that water and they give thanks by putting the things there. Each spring has watermakers. ... There's one ... back up the coulee there's a spring. A small spring. You can hear him, he calls you. (Bill Tallbull, 10/30/92).

Mr. Tallbull describes another spirit, named Icky-wicky [sic], who lives in a hill near the Tongue River south of the reservation near the Tongue River Reservoir.

> There's some sites that people never bothered because they are too powerful, spiritually powerful. Stay away from them. Not too far from there, for instance, there is a hill. A red-shaled hill. In there is a spirit that used to walk among the camps along Tongue River. He had face on both sides. He had two faces. He had a necklace of ears of people. ... Okay, then he came down to the camps of Cheyenne. He really didn't bother the Cheyennes much. They never bothered him. But the ancient warriors said that he came and took the ears of his people. Then one young man went down along the creek and got [box elder mushrooms]. And he put strings through there and wore that thing. And it looked like ears of people, so he went and talked to him. When that spirit saw the necklace, the same necklace, that he was wearing, they started talking to each other. The man said, how would I return these if they ask for them? The man [spirit] told him. Well, he wasn't supposed to tell. But when he saw that this guy had the ... mushroom, box elder mushroom, then he divulged that information. So, he went home. He told the medicine men, I know how Icky-wicky get the return of those ears. And so they got, they returned them in with some ceremony they had to go through. (Bill Tallbull, 10/30/92).

Mr. Tallbull went on to explain contemporary experiences with Icky-wicky:

> That spirit is still there because it has taken Cheyenne. It took old man Strange Owl and his wife when he went to Sheridan, the Sheridan rodeo, on a wagon. Then when my people came the next day, these two had

> moved on. But when my people moved in there, they looked to that hill there and they saw that old man and his wife standing there. Their spirits were already taken. They were already in that mountain, and they saw them. Then later on, a few days when he got to Sheridan rodeo, both of them passed away suddenly. His grandson, he has a grandson, that had a car wreck not very far from there. ... So it probably ... his grandson is there too. So these people that are compatible with that ... we are going to that direction where the spirit hid. He said when he comes through camp he doesn't bother anybody because he knows that we have a way of ... we have a way of taking care of him. All we have to do is give him something. So they knew how to treat that. (Bill Tallbull, 10/30/92).

The Tongue River Valley also contains spirit trails by which the spirits visit each other. (Tallbull and Deaver, 1991:11-12).

Again, this discussion of sites important to the Northern Cheyenne is not exhaustive. It is only as complete as the survey and consultation work has been up to January 2002. Future work in the Tongue River Valley will, no doubt, document other sites with traditional cultural significance to the Northern Cheyenne as well as continuing relationships between the valley and the Cheyenne.

VI. Conclusion

The Northern Cheyenne reservation, where the Tribe and its individual members control 99% of the landbase, is the last refuge where the Northern Cheyenne can retain and continue to live their unique culture. The Northern Cheyenne have a sacred trust to protect their remaining homeland. To this end the carefully husband the land and its resources.

The land and the associated resources are not simple inanimate properties to the Northern Cheyenne. Rather they are living beings, relations of the Northern Cheyenne, who deserve respect, nurturing and careful consideration. Consequently, for the Cheyenne it is appropriate to take only what you need and safeguard the rest. Taking everything you can is both a shortsighted foolish waste of resources and an immoral act.

Chapter 2 recounts Northern Cheyenne history and explains why every piece of Northern Cheyenne correspondence and report title page includes the statement, "Little Wolf and Morning Star-Out of defeat and exile they led us back to Montana and won out Cheyenne homeland that we will keep forever." The continuing health of the reservation land and resources is crucial to the continuing survival of the Northern Cheyenne.

In this Chapter, the Tribe's cultural resources are described. Here, the Northern Cheyenne unique view of the world is made apparent from the beginning. The very definition of cultural resources includes water, plants, animals, Great Birds, fish,

minerals as well as the more routinely described archaeologically defined sites. The spiritual characteristics of natural resources are important to the Northern Cheyenne because they give meaning to the landscape in which the live. Past peoples' imprint on the landscape of southeastern Montana is important to the Cheyenne because it is a pervasive reminder of their connection to their homeland.

Since places, localities, landforms, and more narrowly defined archaeological sites are seen as having both physical and spiritual characteristics, evaluation of cultural resources, on or off-reservation, must consider both types of characteristics to address Northern Cheyenne cultural concerns. Consequently, compliance with section 106 of NHPA requires systematic and consistent consultation as well as routine cultural resources surveys. This is applicable to off-Reservation as well as on-Reservation cultural resource work. As documented in this chapter, the Northern Cheyenne maintain a continuing relationship with the natural resources beyond their current political boundaries. Further, they have important historical and ceremonial ties to archaeological sites through out the region for the proposed energy development.

As noted throughout this chapter, graves are sacrosanct. They should never be disturbed, i.e., always shown respect. NAGPRA is the relevant legal statute for the treatment of graves when they are on trust lands on the reservation or federal lands when off-reservation.

CHAPTER 8

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II. Interviews:

As is indicated in the text, much of the information in this report, especially in Chapters 4 and 5 is derived from interviews conducted with Tribal officials and others with knowledge of social and economic conditions on the Northern Cheyenne Reservation. These interviews were generally conducted in person, but were sometimes conducted by phone. Notes from these interviews are available for review upon request. A list of the interviews conducted for this report is set forth below.

INTERVIEW	INTERVIEW DATE
Russ Alexander	January 10, 2002
Charlie Bearcomesout	February 26, 2002
John Bradley	January 25, 2002
Carrie Braine	January 9, 2002
Ed Catrell	January 9, 2002
Kim Dahle	January 24, 2002
Kirk Denny	February 4, 2002
Leonard Elkshoulder	January 9, 2002
Clifford Foote	January 23, 2002
Bonnie Granbois	March 1, 2002
Dorothy Gray	February 26, 2002
Ray Heaton	January 9, 2002
Albert LaRance	January 23, 2002
Joe Little Coyote	January 6, 2002; January 8, 2002; March 3, 2002
Jay Littlewolf	February 20, 2002; April 12, 2002
Gina Littlewolf-Millegan	January 10, 2002
Newta Manley	January 8, 2002
Marianne Mason	March 22, 2002
Glen Melville	January 24, 2002
Dave Millegan	February 25, 2002
Tom Mexican Cheyenne	January 25, 2002
Ed Naranjo	January 24, 2002

INTERVIEW	INTERVIEW DATE
Jim Nygaard	January 24, 2002
Sue Parker	January 8, 2002
Tony Prairie Bear	January 25, 2002
Marlene Redneck	January 25, 2002
Jolene Rising Sun	January 23, 2002
Karol Robb	January 9, 2002
John Robinson	March 7, 2002
Joe Rodriguez	January 23, 2002
Frank Desmond Rollefson	January 8, 2002; April 22, 2002
John Russell	January 24, 2002
George Scalpcane	January 8, 2002; January 23, 2002
Mary Shoulderblade	January 23, 2002
Linda Simpson	January 23, 2002
Rachel Soldierwolf	January 23, 2002
Ernestine Spang	January 25, 2002
Gaylene Spang	January 9, 2002
Bill Tallbull	October 30, 1992
Linwood Tallbull	January 8, 2002
John White	January 8, 2002
Jason Whiteman	February 25, 2002
Isadore Whitewolf	January 8, 2002
Mike Williams	January 9, 2002
Calvin Wilson	January 9, 2002
Haman Wise	January 6, 2002
Fred Wiseman	January 24, 2002
Curtis Yarlett	January 10, 2002

Appendix A

A "Snapshot" of Businesses and Household Economics

The Surveys.

Native Action conducted two surveys in 1996-1997: 1) a Community and Economic Development Survey, and 2) a Reservation Business Survey. In the Community and Economic Development Survey, a large sample of 494 reservation households was interviewed. The random sample is stratified by community – that is, the five Reservation communities are represented in the sample in proportion to their size. The Community Survey questionnaire has 227 questions concerning various aspects of the reservation community, focusing on livelihoods, facilities, and attitudes toward development. A number of these questions that make up the questionnaire have numerous sub-parts. The relatively large sample size helps ensure the validity and reliability of the results. The total database, consisting of responses by 494 Reservation household members to over 227 questions represents a substantial source of information on Northern Cheyenne Reservation households in the late 1990s.

The Native Action Business Survey is a 100% survey of the businesses then on the Reservation. Native Action identified 30 businesses. The Business Survey questionnaire has 100 questions concerning various aspects of the businesses. This section presents some selected results from the two surveys.

Northern Cheyenne Reservation Business Survey, 1997

Thirty Reservation businesses were surveyed. This represents the number of businesses located on or operating from the Northern Cheyenne Reservation in 1997. It does not include Northern Cheyenne businesses located off the Reservation.

In 1997, thirty businesses were located on the Reservation. Twenty-two of the businesses reported having employees other than the owner, eight did not have employees. The 22 businesses who had hired in 1995 reported a total of 103 full time employees, 81 part time employees, and 61 seasonal/temporary employees, for a total of 289. Reported monthly Payrolls ranged from $112,717 to $200, for a total of $234,817. Gross monthly revenues ranged from $450,000 to $200, and totaled $749,200.

Twelve of the businesses reported that they were incorporated, 18 were not. Northern Cheyennes owned 18 of the businesses, while the remainder were

evenly split between members of other tribes and non-Indians. Eleven Reservation businesses were owned by non-Indians and eleven by members of other tribes. The following table lists the 30 businesses ranked by the year they were started.

Table 1a: Businesses by Year Started

Businesses Ranked by Year Started	
TRECO-Electric Co Op	1946
Lame Deer IGA	1952
Ranching	1957
Ranching	1970
Beauty Salon	1975
Laundromat	1976
Grocery Store	1976
Chicken Coop	1976
Home Health Care	1978
Self-employed	1982
Hair Salon	1983
Construction	1984
Parker Construction	1984
Cozy Video	1985
Painting	1986
video production	1986
Arts and Crafts	1986
Polysapphire, Inc.	1987
Convenience Store	1987
Dull Knife Café	1990
Cheyenne Children Services	1990
Kinzel Trucking	1991
Convenience Store	1992
Trail Ride	1992
Western Pump	1993
Badger Backhoe	1994
Bead work	1994
Self employed	1996
Convenience Store	1996
Java Junkies	1997

Table 1b: Number of Years the Enterprises Have Been in Business

Years in Business	No. Businesses Reporting
1 to 5 Years	9
6 to 10 Years	6
11 to 15 Years	6
16 Years or more	9

Table 1b shows the number of years the thirty Reservation businesses reported being in business. Half of the firms reported being in business less than 10 years.

Sixteen respondents reported that it had been difficult to get their business started. The largest single source of difficulty reported was lack of capital (8 respondents), with lack of management skills and lack of tribal government support tying for second place with 3 each. Two respondents reported facing discrimination in lending by local banks. Fifteen of the businesses had received loans to start, and fifteen had not.

Community and Economic Development Survey

The following are some selected results from the Native Action Community and Economic Development Survey, conducted on the Reservation in 1997. Table 2 and Figure 1 show the reported employment status of the respondents and their households.

Table 2

Q. 213-214: What is the employment status of the adults in your household?								
	Empl Full Time	Empl Part time	Temp/ Seasonal	Retired/ Disabled	Home-maker	Unempl.	N. A. or None/ Skip	TOTAL
213 Self	204	56	46	41	25	117	4	493
214 Adult 2	147	36	32	35	35	100	108	493
215 Adult 3	41	20	16	8	11	59	338	493
216 Adult 4	12	8	9	0	4	44	416	493
Totals	404	120	103	84	75	320	866	

.

Fig. 1

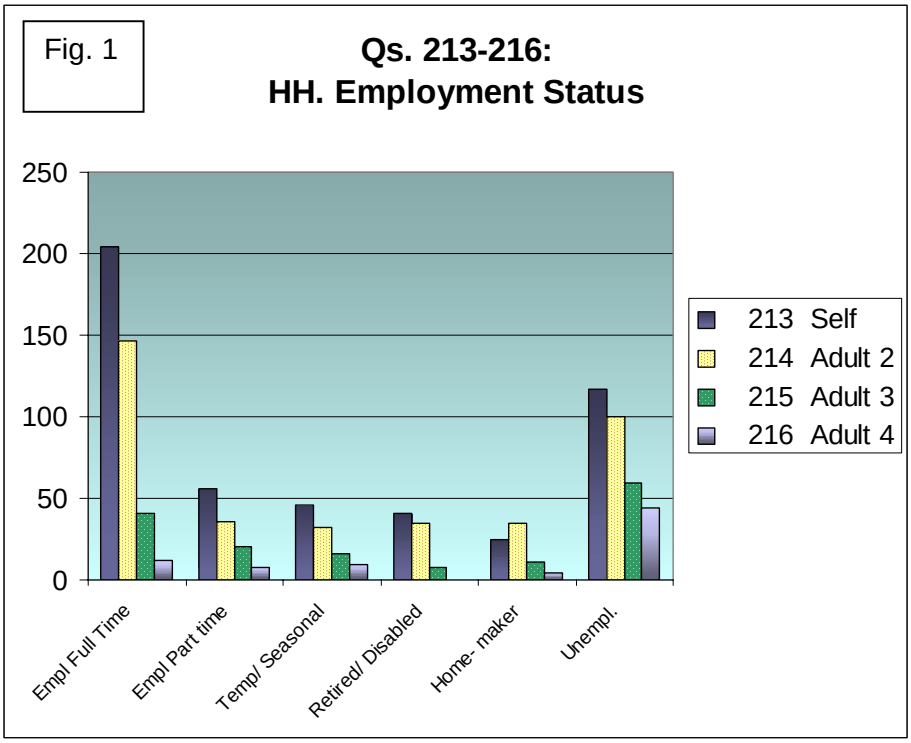
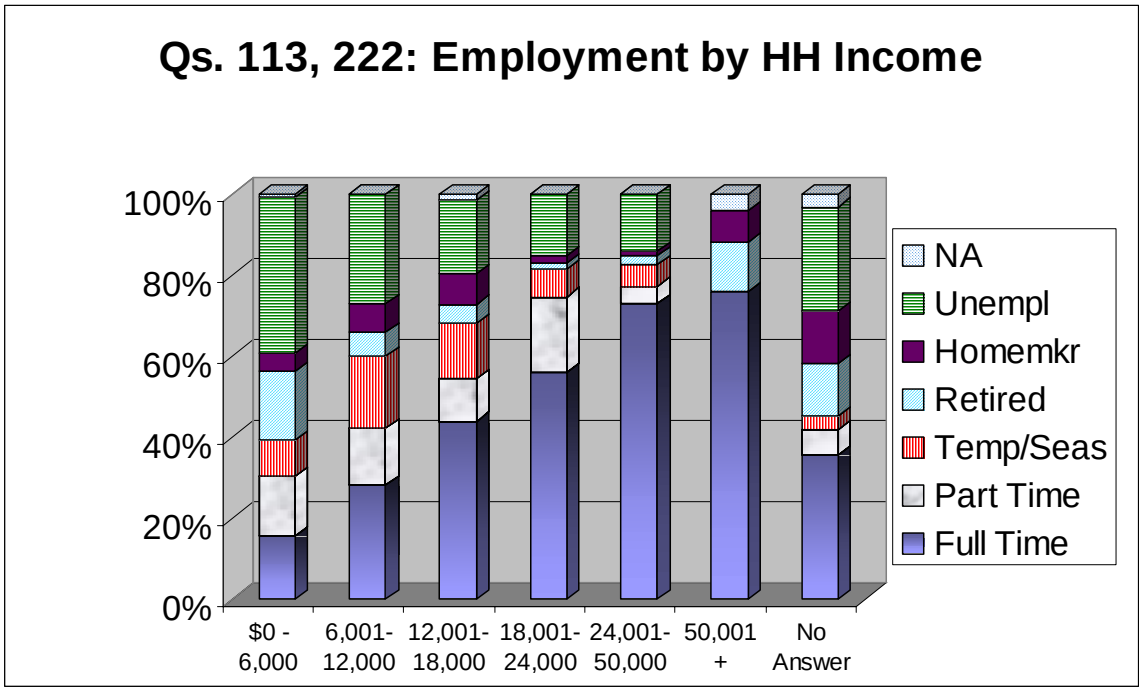


TABLE 3: HH Income Level by Employment Status of Interviewee								
Q. 213: Employment Status of Interviewee. Q. 222: Household Income Level.								
		Employment Status of Interviewee						
HH Income	Full Time	Part Time	Temp/Seas	Retired	Homemkr	Unempl	NA	TOTALS
$0 - 6,000	21	20	12	23	6	52	1	135
6,001-12,000	24	12	15	5	6	23	0	85
12,001-18,000	29	7	9	3	5	12	1	66
18,001-24,000	33	11	4	1	1	9	0	59
24,001-50,000	67	4	5	2	1	13	0	92
50,001 +	19	0	0	3	2	0	1	25
No Answer	11	2	1	4	4	8	1	31
TOTALS	204	56	46	41	25	117	4	493

Table 3 and Figure 2 show that, just as for non-Indian households off the Reservation, household income is directly related to employment. What is perhaps surprising is the number of households whose heads work full time that nevertheless have low household incomes.

The result illustrated in Figure 3 dispels the common myth that Reservation Indians live well off of government transfer payments. Without adequate jobs, people on the Reservation remain desperately poor, just as do non-Indians elsewhere. Only by working do Northern Cheyenne receive living incomes.

Figure 2: Household Income Level by Employment Status of Interviewee



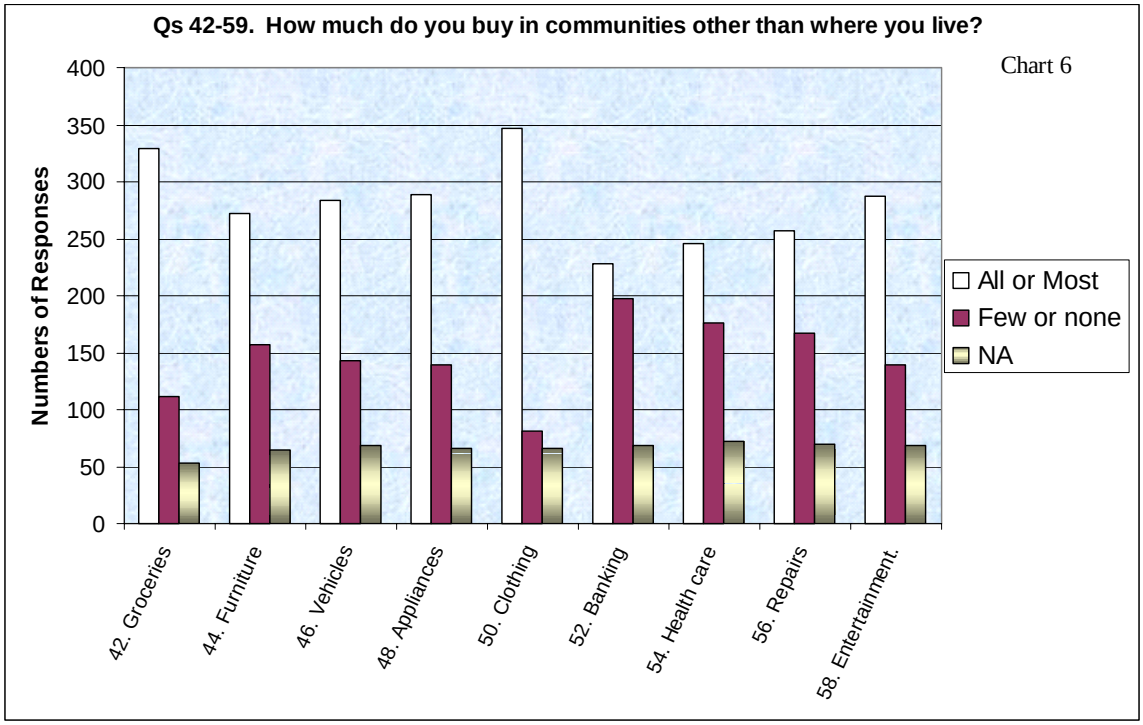
The following questions are about where Northern Cheyennes go to shop; and recreate.

TABLE 4: Qs 42-59. Pt. A: For each of the following types of goods and services, how much do you purchase in communities other than your own?

ITEMS	4. All	3. Most	2. Few	1. None	0. NA	TOTAL
42. Groceries	86	243	99	13	53	494
44. Furniture	190	82	72	85	65	494
46. Vehicles	222	61	56	87	68	494
48. Appliances	192	97	72	67	66	494
50. Clothing	252	95	48	33	66	494
52. Banking	179	49	42	156	68	494
54. Health care	116	130	100	76	72	494
56. Repairs	137	120	93	74	70	494
58. Entertainment.	155	132	75	64	68	494

.

Figure 3: Purchases made in other communities



As Table 4 and Figure 3 derived from it show, none of the goods and services listed are purchased locally by a majority of respondents. Clothing and, surprisingly, groceries, show the highest rates of non-local purchases. (Banking and health care show the highest local purchases. Later questions, however, indicate that many people do not have bank accounts, so this question needs further analysis.)

The above table and chart refer to *non-local* purchases. For many people who live in communities other than the Reservation capital and market center of Lame Deer, there virtually are no local options. But some items, especially clothes (limited selection) and groceries, are available in Lame Deer. Thus, the above figures do not discriminate between on-Reservation and off-Reservation purchases. Figure 4, and Table 5 below, in contrast, look at goods and services purchased off- as opposed to on-Reservation.

Figure 4 Purchases on and off-Reservation

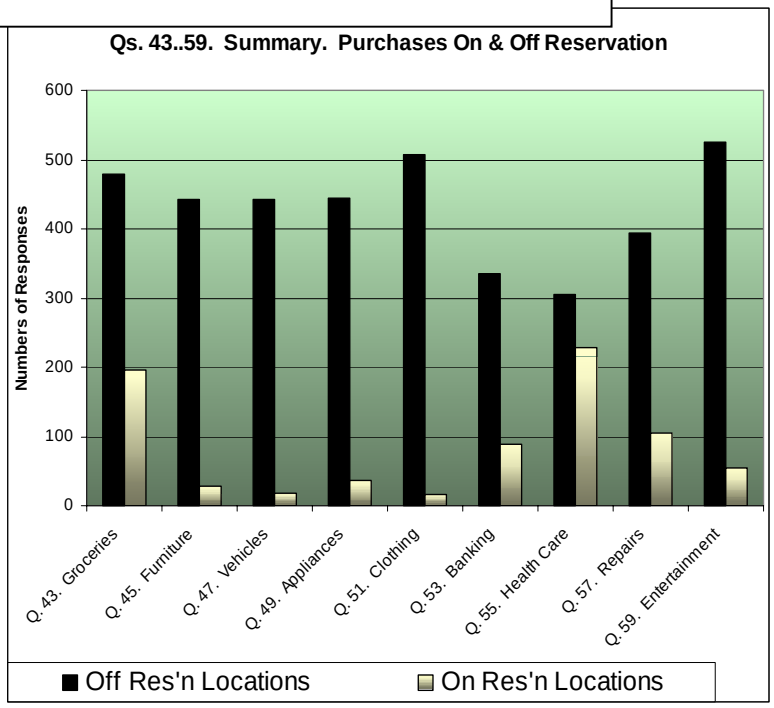


Table 5: Purchases on and off Reservation

Item	Off Res Locations	On Res Locations
Q. 43. Groceries	478	195
Q. 45. Furniture	443	29
Q. 47. Vehicles	443	18
Q. 49. Appliances	445	37
Q. 51. Clothing	507	17
Q. 53. Banking	335	88
Q. 55. Health Care	305	228
Q. 57. Repairs	394	106
Q. 59. Entertainment	526	54

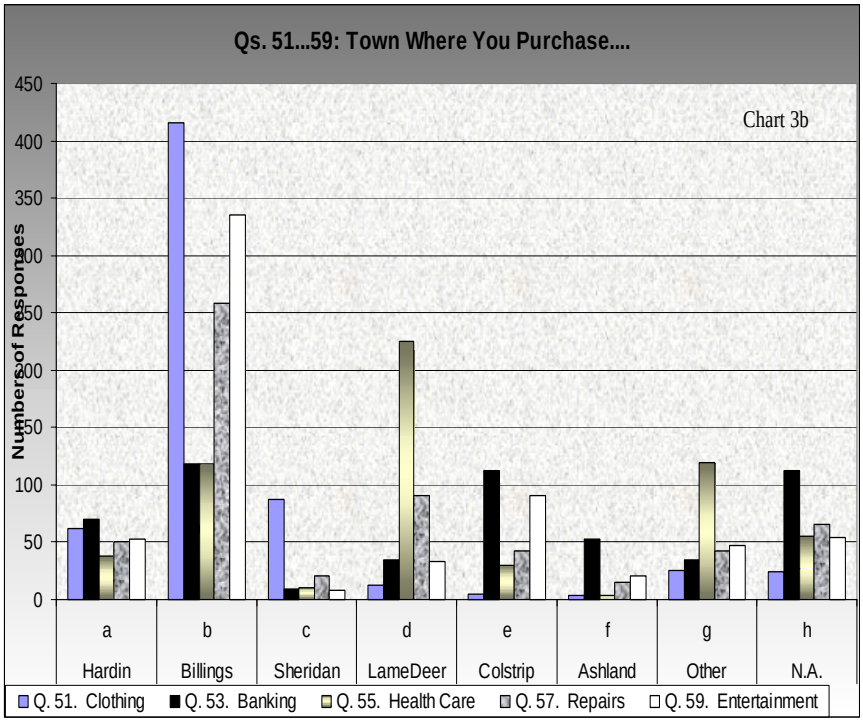
Reservation residents purchase the vast majority of all goods and services listed in off-Reservation locations, especially Billings. Groceries and health care show the largest proportions of on-Reservation purchases, with repairs and banking following, respectively, distant third and fourth. With the Indian Health Service clinic in Lame Deer, health care is more evenly parceled between on- and off-reservation than any other item.

The following charts and tables show in which towns Northern Cheyenne households purchase their goods and services. Billings, the regional market center, two hours by car from Lame Deer, receives by far the largest segment of Northern Cheyenne business.

Table 6

Qs. 42-59, Part B: Town other than own where purchased:	Hardin	Billings	Sheridan	LameDeer	Colstrip	Ashland	Other	N.A.	TOTS
Q. 43. Groceries	97	276	43	161	95	34	10	13	729
Q. 45. Furniture	22	387	32	28	3	1	31	46	550
Q. 47. Vehicles	20	384	24	15	4	3	35	52	537
Q. 49. Appliances	51	363	42	35	7	2	24	52	576
Q. 51. Clothing	62	415	87	13	5	4	25	24	635
Q. 53. Banking	70	118	9	35	112	53	35	113	545
Q. 55. Health Care	38	118	10	225	30	3	119	55	598
Q. 57. Repairs	51	258	21	91	42	15	43	65	586
Q. 59. Entertainment	53	335	8	33	91	21	47	54	642
NOTE: Totals are more than number of respondents, because people could list more than one option as their answer to each question.									

Figure 5



Qs 60-66Since Jan '96, when you purchased goods and services, how much did you spend in:	a. $0-50	b. $51-99	c. $100-199	d. $200-299	e. $300-399	f. $400-499	g. $500+	h. NA	
Q. 60. Hardin	161	57	74	62	34	12	49	45	494
Q. 61. Billings	23	15	44	48	42	25	278	19	494
Q. 63. Lame Deer	70	57	63	71	52	30	136	15	494
Q. 64. Colstrip	161	72	72	52	26	22	39	50	494
Q. 65. Ashland	279	44	34	22	10	6	34	65	494
Q. 66. Other	169	19	22	23	8	5	56	192	494

Figure 6

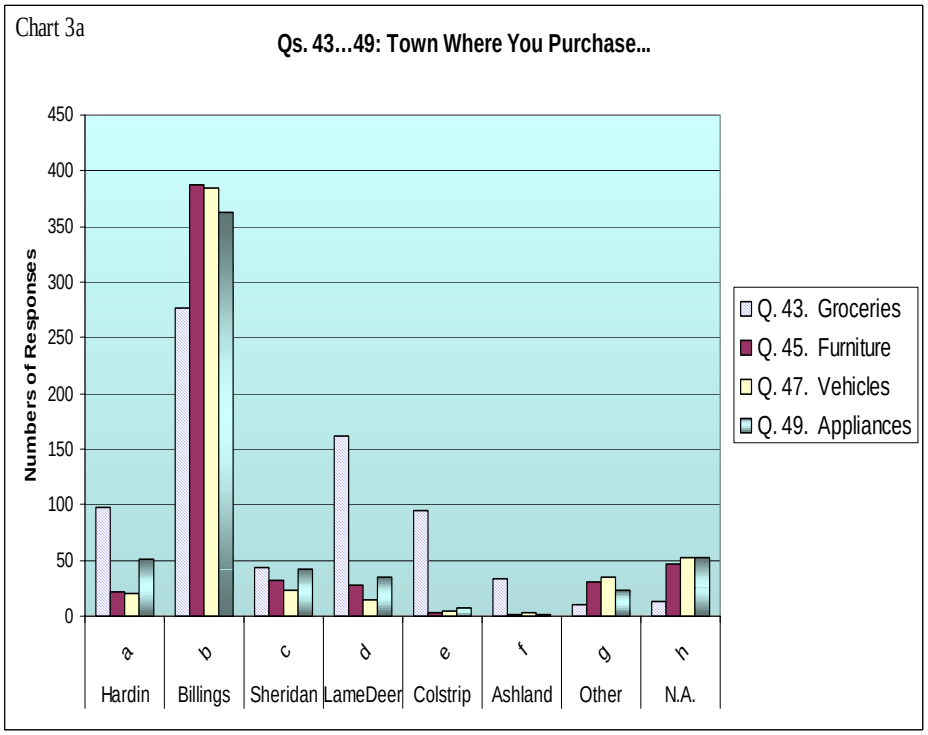
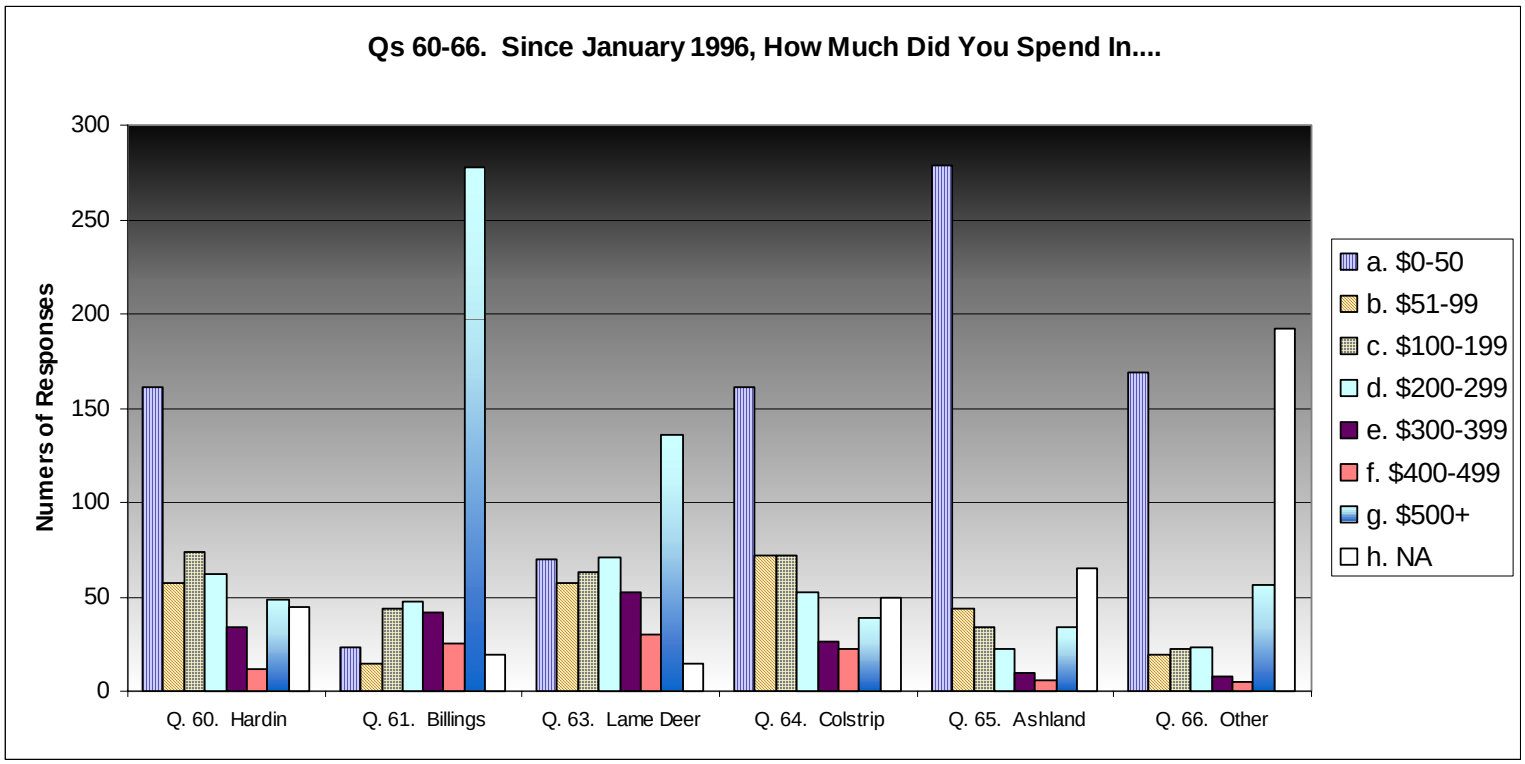


Figure 7



AMENDED [*]

CONSTITUTION AND BYLAWS

OF THE

NORTHERN CHEYENNE TRIBE

OF THE

NORTHERN CHEYENNE INDIAN RESERVATION

PREAMBLE

We, the members of the Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation in Montana, in order to establish a more unified tribal organization and to insure and promote the best interests of our society, industry, prosperity, and the general welfare of ourselves and our posterity do hereby establish this Constitution and Bylaws.

ARTICLE I – TERRITORY

The jurisdiction of the Northern Cheyenne Tribe under this Constitution and Bylaws shall extend to the territory within the confines of the Northern Cheyenne Indian Reservation boundaries as established by Executive Order dated November 26, 1884, under the administration of Chester A. Arthur and extended March 19, 1900, under the administration of William McKinley and to such other lands as may be hereafter added thereto by any law of the United States, except as otherwise provided by law.

ARTICLE II – MEMBERSHIP

Section 1. The membership of the Northern Cheyenne Tribe shall consist of as follows:

(a) All persons of Northern Cheyenne Indian blood whose names appear on the official census roll as of January 1, 1935, provided that by January 1, 1962, corrections shall be made in said roll by the Tribal Council, subject to approval of the Secretary of the

[*] This document sets forth the text of the original Constitution and Bylaws adopted in 1935, as amended by amendments adopted in 1960 and 1996.

Interior.

(b) Each person of one-half (1/2) or more Northern Cheyenne Indian blood, regardless of residence, born heretofore or hereafter to any member or descendant of a member of the Northern Cheyenne Tribe whose name was or is on the census roll referred to in Section 1(a) shall automatically be entitled to membership in the Northern Cheyenne Tribe.

(c) All children heretofore born to any member of the Northern Cheyenne Tribe who was a resident of the Northern Cheyenne Indian Reservation at the time fo the birth of said children.

Section 2. The Tribal Council shall have power to promulgate ordinances, subject to review by the Secretary of the Interior, covering future membership including adoptions and the loss of membership.

ARTICLE III – GOVERNING BODY AND OFFICERS

Section 1. The Tribal Council shall consist of eleven members holding the following seats:

(a) One at-large seat held by the Vice President of the Tribe, except when the Vice President is presiding over the Tribal Council due to the absence of the President.

(b) Five seats allocated one each to the Reservation districts of Ashland, Birney, Busby, Muddy and Lame Deer.

(c) Five seats allocated among the five districts in accordance with the percentage of the Tribal membership associated with each district, with fractional seats being rounded off to the nearest whole number. The allocation of these five seats shall be determined for the regular election of 1996, and redetermined for the regular election held every four years thereafter. By ordinance, the Tribal Council shall establish standards and methods for the implementation of such allocations.

(d) The Tribal Council shall have power to change the boundaries of the districts.

(e) The members of the Tribal Council holding the ten seats allocated among the districts shall b selected through district primary elections followed by a general election conducted at-large, as provided in Article VI, Section 4. The Vice President holding the at-large seat shall be selected through a primary election followed by a general election, both conducted at-large as provided in Article VI, Section 3.

Section 3. The officers of the Tribe shall be a President and Vice President who shall be elected by a popular vote as hereinafter provided; a Sergeant at Arms elected by the Tribal Council

from within its own number; and a Secretary and a Treasurer appointed by the Tribal Council from outside its number. The Secretary and the Treasurer shall have no vote. Other officers and committees shall be appointed as provided in Article I, Section 1 of the Bylaws.

Section 4. All regular elections for President, Vice President and Tribal council seats allocated to Reservation districts shall be held in even numbered years on the date set for regular Congressional elections, including the regular election of 1996 which shall be held on Tuesday, November 5, 1996. The President and Vice President shall serve for four years, and the members of the Trial Council holding the ten district seats shall serve for four years, and the members of the Tribal Council holding the ten district seats shall serve for four years in staggered terms, provided that in the regular election of 1996 five members of the Tribal Council shall be elected for two-year terms, as set forth in Article VI, Section 4(d). After each regular election for the Tribal Council, the Council shall appoint the Sergeant at Arms, Secretary and Treasurer, each of whom shall serve at the pleasure of the Council.

Section 5. It si contemplated that the President, Vice President, Secretary and Treasurer, and all members of the Trial Council ("Tribal Officials") will serve on a full-time basis, and will receive therefor a salary commensurate with the responsibilities of office and other appropriate emoluments of office, to the extend prudent in light of available Tribal financial resources. No Tribal Official may receive additional compensation or other financial benefits for: serving on any committee of the Tribal Council; serving on boards, commissions or bodies governing or managing instrumentalities or programs of the Tribe; or undertaking while in office tasks which would ordinarily be performed on behalf of the Tribe or an instrumentality or program of the Tribe by an employee or contractor.

ARTICLE IV – POWERS OF THE TRIBAL COUNCIL

Section 1. **Enumerated Powers.** The Tribal Council of the Northern Cheyenne shall exercise the following powers, subject to any limitations imposed by the applicable statutes of the Unites States and subject further to all express restrictions upon such powers contained in the Constitution and the attached Bylaws:

(a) To negotiate with the Federal, State, and local governments, on behalf of the Tribe, and to advise and consult with the representatives of the Interior Department on all activities of the Department that may affect the Northern Cheyenne Indian Reservation.

(b) To employ legal counsel for the protection and advancement of the rights of the northern Cheyenne Tribe and its members, the choice of counsel and fixing of fees to be subject to the approval fo the Secretary of the Interior.

(c) To approve or prevent any sale, disposition, lease or encumbrance fo tribal lands, interests in lands or other tribal assets, including minerals, gas and oil.

(d) To advise the Secretary of the Interior with regards to all appropriation estimates or Federal projects for the benefit of the Northern Cheyenne Tribe prior to the submission of such estimates to the Bureau of the Budget and to Congress.

(e) To engage in any business that will further the economic well-being of the member of the Tribe and to undertake any economic activity of any nature whatever not inconsistent with law or any of the provision of this Constitution.

(f) To administer any funds within the control of the Tribe; to make expenditures from available funds for trial purposes, including salaries and expenses of trial officials or employees. All expenditures of tribal funds under control fo the Tribal Council shall be by resolution duly approved by a majority of the tribal Council in legal session and the amounts so expended shall be a matter of public record at all times.

The Tribal Council, subject to the approval of the Secretary of the Interior, or his authorized representative, shall prepare annual budget requests for the advancement to the control fo the Tribe such money as it now or may hereafter be deposited to the credit of the Tribe in the United States Treasury or which may hereafter be appropriated for the use of the Tribe.

(g) To levy taxes or assessments upon members of the Northern Cheyenne Tribe and to require the performance of community labor in lieu thereof, and to levy taxes or license fees, subject to review by the Secretary of the Interior, upon nonmembers doing business within the Reservation.

(h) To exclude from the restricted lands of the Northern Cheyenne Indian Reservation persons not legally entitled to reside therein, under ordinance which shall be subject to review by the Secretary of the Interior.

(i) To promulgate and enforce ordinances, which shall be subject to review by the Secretary fo the Interior, governing the conduct of members of the Northern Cheyenne Tribe and any other person or persons coming within the jurisdiction fo the reservation, and providing for the maintenance of law and order and the administration of justice by establishing a reservation court and defining its duties and powers.

(j) To purchase, under condemnation proceedings in courts of competent jurisdiction, land or other property needed for public purposes, subject to the approval of the Secretary of the Interior.

(k) To protect and preserve the property, wildlife, and natural resources of the Tribe and to regulate the conduct of trade and the use and disposition of property upon the reservation, provided that any ordinance directly affecting nonmembers of the Tribe

shall be subject to review by the Secretary of the Interior.

(l) To cultivate and preserve native arts, crafts, culture and Indian ceremonials.

(m) To administer charity and to protect the health and general welfare of the Tribe.

(n) To establish subordinate organizations of members of the Tribe for economic purposes.

(o) To regulate the inheritance of property, real and personal, other than allotted lands, within the territory fo the Northern Cheyenne Indian Reservation, subject to review by the Secretary of the Interior, and to consult with the Examiner of Inheritance in all heirship findings before they are submitted to the Secretary of the Interior.

(p) To regulate the domestic relations of members of the Tribe and of nonmembers married to the Tribe.

(q) To provide for the appointment of guardians for minors and mental incompetents by ordinance or resolution subject to review by the Secretary of the Interior.

(r) To adopt resolutions regulating the procedures of the Council, other tribal agencies, and tribal officials of the reservation.

(s) To delegate to subordinate boards or officials or to cooperative agencies which are open to all members of the Tribe any of the foregoing powers, reserving the right to review any action taken by virtue of such delegated powers.

Section 2. Future Powers. The Tribal Council of the Northern Cheyenne Tribe may exercise such future powers as may in the future by given to the Council by members of the Tribe through the adoption of appropriate Bylaws and Constitutional amendments.

Section 3. Reserved Powers. Any right and powers heretofore vested in the Northern Cheyenne Tribe but not expressly referred to in this Constitution shall not be abridged by this article, but may be exercised by the people fo the Northern Cheyenne Tribe through the adoption of appropriate Bylaws and Constitutional amendments.

Section 4. Manner of Review. Any resolution or ordinance which pursuant to this Constitution is subject to review by the Secretary of the Interior, shall be presented to the Superintendent of the Reservation within ten (10) days of enactment by the Tribal Council, and to Superintendent shall, within ten (10) days after receipt, approve or disapprove same.

If the Superintendent shall approve any ordinance or resolution, it shall thereupon become effective, but the Superintendent shall transmit a copy of the same, bearing his endorsement, to the Secretary

of the Interior, who may withing ninety (90) days from the date of enactment rescind the said ordinance or resolution for any cause by notifying the Tribal Council of such decision.

If the Superintendent shall refuse to approve any ordinance or resolution submitted to him within ten (10) days after its receipt, he shall advise the Tribal Council of his reasons therefor. If these reasons appear to the council insufficient, it may, by a majority vote, refer the ordinance or resolution to the Secretary of the Interior, who may within ninety (90) days from the date of its enactment approve the same in writing, whereupon the said ordinance or resolution shall become effective.

ARTICLE V – BILL OF RIGHTS

Section 1. All members of the Tribe shall be accorded equal opportunities to participate in the economic resources and activities of the Tribe.

Section 2. **Election Ordinances.** Subject to the provisions of this Constitution and Bylaws, all elections and other membership votes, whether primary, regular, special, referendum, or other election or vote, shall be conducted in accordance with such ordinances and resolutions as may be adopted by the Tribal Council.

Section 3. Election of President and Vice President. Candidates for President and Vice President shall be determined, and the President and Vice President shall be elected in at-large general elections, as follows:

(a) A person desiring to run for President or Vice President shall file a Declaration of Candidacy which certifies the intent to run for the office and the possession of all qualifications for the office, and shall pay a $200 filing fee. For each regular election fro President or Vice President after the 1996 election, the Tribal Council may adjust the filing fee to account for inflation or other factors. Any person qualifying for a general election for President or Vice President by write-in vote in a primary election shall promptly file a Declaration of candidacy and pay the filing fee.

(b) If more than two qualified persons file to run for President or for Vice President, there shall be a primary election among such persons, conducted at-large and held at least 30 days before the general election. Write-in voting shall be permitted in the primary. The two top vote-getters in the primary shall be the only candidates for such office in the general election, provided that if more than two persons tie for top vote-getter, or if there is one top vote-getter and a tie for second place, all such persons shall be the candidates. Write-in voting shall not be permitted in such general election. If a candidate dies, withdraws or is disqualified prior to the general election, the candidates shall be redetermined on the basis of the primary results without considering votes cast for the former candidate, provided that if this yields less than two candidates, write-in voting shall be permitted in such general election.

(c) If no more than two qualified persons file to run for President or for Vice President, there shall be no primary election for such office. The person(s) who filed for such office shall be the only candidate(s) for such office in the general election. Write-in voting shall be permitted in such general election.

(d) On Tuesday, November 5, 1996, and on the date set for regular Congressional elections every four years thereafter, there shall be regular elections for President and Vice President. The top vote-getter in every regular election shall be elected for a four-year term.

Section 4. Election of Council. Candidates for the ten Trial Council seats allocated among the Reservation districts shall be determined, and the Council members shall be elected in at-large general elections, as follows:

(a) A person desiring to run for a Tribal Council seat allocated to a district shall file a Declaration of Candidacy which certifies the intent to run and the possession of all qualifications for the office, and shall pay a $50 filing fee. For each regular election for the Tribal Council after the 1996 election, the Tribal Council may adjust the filing fee to account for inflation or other factors. Any persons qualifying for a general election for the Tribal Council by write-in vote in a primary election shall promptly file a Declaration of Candidacy and pay the filing fee.

(b) If the number of qualified persons filing to run for the Tribal Council from a district is more than twice the number of open Council seats allocated to the district, there shall be a primary election among such persons, conducted within the district and held at least 30 days before the general election. Only the voters of the district may vote in the primary. Write-in voting shall be permitted in the primary. In descending order of votes received, the top vote-getters in the district primary shall be included in the general election as the only candidates for the open seat(s) in the district, until the number of such included candidates equals twice the number of such open seat(s); provided that if there is a tie for lowest vote-getter among such persons, the tied persons shall be included among the candidates. Write-in voting shall not be permitted in such general election. If a candidate dies, withdraws or is disqualified prior to the general election, the candidates for the open seat(s) in the district shall be redetermined on the basis of the primary results without considering votes cast for the former candidate, provided that if this yields a number of candidates which is less than twice the number of such open seat(s), write-in voting shall be permitted in such general election.

(c) If the number of qualified persons filing to run for the Tribal Council from a district is no more than twice the number of open Council seats allocated to the district, there shall be no primary election for such seat(s). The person(s) who filed for such seat(s) shall be the only candidate(s) for such seat(s) in the general election. Write-in voting

shall be permitted in such general election.

(d) On Tuesday, November 5, 1996, there shall be a regular election to fill the ten Tribal Council seats allocated among the districts. The top vote-getter among the candidates for the seat(s) allocated to a district shall be considered elected to the seat allocated to the district under Article III, Section 2(b) and shall serve a four-year term. The other five successful Council candidates in that election shall be considered elected to the seats allocated under Article III, Section 2(c) and shall each serve a two-year term.

(e) On the date set for regular Congressional elections in 1998, and on the comparable date every two years thereafter, there shall be a regular election to fill five open Council seats, each for a four-year term.

(f) In every regular and special election for Tribal Council, the top vote-getter(s) among the candidates for open Council seat(s) allocated to a district shall, in descending order of votes received, be considered elected to such seat(s) until the open seat(s) have thereby been filled.

Section 5. Miscellaneous Election Rules.

(a) A person may not simultaneously file Declarations of Candidacy for more than one position. A person may not be listed as a candidate for more than one position in the general elections. If a person qualifies as a candidate for more than one position in the general elections, such person promptly shall advise the Tribal Secretary as to the single position for which such person is to be listed as a candidate in such elections.

(b) Lists of all persons running in elections, whether primary or general, for President, Vice President or the Tribal Council, shall be posted by the Secretary in each of the Reservation districts at least three weeks before the date of the election.

(c) No person may simultaneously hold more than one elected office. While holding an elected office a person may run for a second office, provided that, if such person is elected, the first office shall become vacant when such person is sworn in to the second office. While employed or retained by the Tribe or an instrumentality of the Tribe a person may run for office, provided that, if elected, such person shall resign from such employment or position.

(d) In all elections for President, Vice President or the Tribal Council other than primary elections, tie votes shall be resolved by a public drawing of lots by the Tribal Secretary.

(e) If a person who is elected to office in any regular or special election dies, withdraws

or is disqualified before being sworn in to the office, candidates for the office shall be redetermined and a general election shall be held in a manner which, in the judgment of the Tribal Council, is most appropriate under the circumstances and in light of the policies underlying Section 3 or 4 above, as the case may be. The decision of the Tribal Council shall be final and not subject to judicial review in any court.

(f) A person elected as President, Vice President, or Tribal Council member shall be elected for the term of office specified in this Constitution and Bylaws and until his or her successor is sworn into office.

ARTICLE VII – REMOVAL FROM OFFICE, FILLING VACANCIES

Section 1. Forfeiture of Office.

(a) Any officer or councilman found guilty of a felony in any tribal, county, State or federal court shall automatically be removed from office and may not stand for election for three (3) years thereafter.

(b) Any officer or councilman found guilty of a misdemeanor involving moral turpitude in any court shall automatically be removed from office, but such member may stand for nomination and re-election.

Section 2. Removal from Office. Any officer or councilman who shall fail to perform the duties assigned to him or shall be guilty of gross neglect may be removed by a two-thirds (2/3) votes of the Tribal Council, after affording the accused member a fair opportunity to be heard in his own defense. The decision of the Tribal Council shall be final.

Section 3. Any complaint against the President, a member or officer of the Tribal Council must be in writing and sworn to by the complainant.

Section 4. Filling Vacancies in Office. If the office of President or Vice President, or a seat on the Tribal Council allocated to a Reservation district, becomes vacant due to death, resignation, removal, or other cause, the Tribal Council shall schedule a special election to fill the vacancy for the remainder of the term of office as follows:

(a) In the case of a vacancy in the office of the President or Vice President, candidates for office shall be determined and the special election shall be held in accordance with Section 3 of Article VI. If the office of President is vacant, the Vice President shall serve as acting President in the interim. If the offices of both President and Vice President are vacant simultaneously, the Tribal Council shall appoint from within its own number an acting President who shall serve in the interim. While the Vice President or appointed Tribal Council member serves as acting President, such

person's seat on the Tribal Council shall be considered temporarily vacant, and upon completion of such service such person shall resume occupancy of the seat.

(b) In the case of a vacancy in one of the ten seats on the Tribal Council allocated among the districts, candidates shall be determined and the special election shall be held in accordance with Section 4 of Article VI.

(c) An election to fill a vacancy shall occur no later than 90 days after the occurrence of the vacancy, provided that, if the vacancy in office occurs when there is less than 180 days remaining in the term of office, the Tribal Council in its discretion may choose not to hold the election. The decision of the Tribal Council shall be final and not subject to judicial review in any court. If the Tribal Council so chooses not to hold an election as to a vacancy in a Tribal Council seat allocated to a district, the Council promptly shall publicly solicit the filing of Declarations of Candidacy by qualified persons desiring to be appointed to the seat for the remainder of its term. No filing fee shall be required. Promptly after the close of such filing period, by majority vote of the Tribal Council shall make such appointment from among all qualified persons filing a Declaration of Candidacy.

(d) Subject to the provisions of this Constitution and Bylaws, all elections and other proceedings to fill a vacancy shall be conducted in accordance with such ordinances and resolutions as may be adopted by the Tribal Council.

ARTICLE VIII – REFERENDUM

Section 1. Upon a petition, signed by at least ten (10) percent of the registered voters from each district, a referendum may be demanded on any tribal adoption of a person or the elimination of a person from the tribal roll, or an any proposed or enacted ordinance or resolution of the Tribal Council and the vote of the majority of the qualified voters voting in such referendum shall be conclusive and binding upon the Tribal Council, provided at least thirty (30) percent of the eligible voters shall vote in such referendum.

ARTICLE IX – LAND

Section 1. Allotted Lands. Allotted lands, including heirship land, within the Northern Cheyenne Indian Reservation shall continue to be held as heretofore by their present owners. It si recognized that under existing law such lands may be inherited by the heirs of the present owner, whether or not they are members of the Northern Cheyenne Tribe. Likewise, it is recognized that under existing law the Secretary of the Interior may, in his discretion, remove restrictions upon such land, upon application by the Indian owner, whereupon the land will become subject to State taxes and may be mortgaged or sold. The right of the individual Indian to hold or to part with his land, as under existing law, shall not be abrogated by anything contained in this Constitution, but the owner of restricted land may, with the approval of the Secretary of the Interior, voluntarily convey

his land to the Northern Cheyenne Tribe either in exchange for a money payment or in exchange for an assignment covering the same land or other land, as hereinafter provided.

Section 2. Tribal Lands. The allotted lands of the Northern Cheyenne Indian Reservation and all lands which may hereafter be acquired by the Northern Cheyenne Tribe or by the United States in trust for the Northern Cheyenne Tribe, shall be held as tribal lands and no part of such land shall be mortgaged, sold, or ceded. Tribal lands shall not be allotted to individual Indians but may be assigned to members of the Northern Cheyenne Tribe, or leased, or otherwise used by the Tribe, as hereinafter provided.

Section 3. Leasing of Tribal Land.

(a) Tribal land may be leased by the Tribal Council, with the approval of the Secretary of the Interior, for such periods as permitted by law.

(b) Grazing permits covering tribal lands may be issued by the Tribal Council, with the approval of the Secretary of the Interior, for such periods of time as permitted by law.

Section 4. Assignments of Tribal Land.

(a) The Tribal Council may by ordinance approved by the Secretary of the Interior provide for the granting and tenure of assignments of tribal land to members of the Tribe, provided, the rights of all members of the Tribe be not violated.

(b) Any member of the Tribe who owns an allotment or any share of heirship land or patent-in-fee land may voluntarily transfer his interest in such land to the Tribe in exchange for an assignment to the same land or for other land or a proportionate share in a larger grazing unit.

Section 5. Use of Unassigned Tribal Land. Tribal land which is not leased or assigned, including tribal timer reserves, shall be managed by the Tribal Council subject to the approval of the Secretary of the Interior, for the benefit of the members of the entire Tribe, and any cash income derived form such land shall accrue to the benefit of the Tribe as a whole.

Section 6. Purchase of Land by Tribe. The Northern Cheyenne Tribal Council is hereby authorized and empowered to use tribal funds to purchase lands or interests in lands for and on behalf of the Northern Cheyenne Tribe under such terms as may be agreed upon provided the purchase is approved by the Secretary of the Interior.

ARTICLE X – AMENDMENTS

This Constitution and Bylaws may be amended by a majority vote of the qualified voters of the Tribe, voting at an election called for that purpose by the Secretary of the Interior, provided that

at least thirty (30) percent of those entitled to vote shall vote in such election, but no amendment shall become effective until it shall have been approved by the Secretary of the Interior. It shall be the duty of the Secretary of the Interior to call an election on any proposed amendment at the request of two-thirds (2/3) of the Tribal Council, or upon presentation of a petition signed by one-third (1/3) of the qualified voters of the Tribe.

ARTICLE XI – SEPARATION OF POWERS

Section 1. Three Branches of Tribal Government. The power of the government of the Tribe shall be divided into three distinct branches – Legislative, Executive and Judicial. No person or entity charged with the exercise of one branch shall exercise a power belonging to another branch unless expressly authorized to do so in this Constitution and Bylaws, Tribal law, or applicable federal law.

(a) The Legislative Branch shall consist of the Tribal Council and all committees of the Tribal Council. The Tribal Council shall exercise the legislative power of the Tribe, subject to the right of referendum reserved to the Tribal membership under Article VIII.

(b) The Executive Branch shall consist of the Tribal President, Vice President, Secretary and Treasurer, and all administrative agencies, departments and other instrumentalities of the Executive Branch.

(c) The Judicial Branch shall consist of all courts established by ordinance under Article IV, Section 1(i) or any other provision of this Constitution and Bylaws.

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BYLAWS

ARTICLE I – DUTIES OF OFFICERS

Section 1. The President may, if he desires, preside over all meetings of the Tribal Council. He shall, with the advice and consent of the Tribal Council, appoint delegates, representatives, committees, or other officers as are deemed proper from time to time. He shall have power to fill all vacancies, not otherwise provided for in this Constitution and Bylaws, that may occur when the Tribal Council is not is session and then he shall submit the names of such appointees at the following session. It shall be his duty to convene the Tribal Council for extra sessions. It shall be his duty to see that all enactments, orders, and resolutions are properly executed. He shall have the further right of conferring with any federal or State official on any matters that affect the welfare of the Tribe. And he shall also have the further right to confer with the several district councils.

Section 2. The Vice President shall act as presiding officer of the Tribal Council whenever the President does not so preside. Whenever the President does not preside he may delegate any or all of his powers to the Vice President. In the event that the office of the President becomes vacant, the Vice President shall become temporary President and shall perform the duties and execute the powers of President until the office of President is filled.

Section 3. The Tribal Council Secretary shall keep a full report of all proceedings of each regular and special meeting of the Tribal Council and shall perform such other duties of like nature as the Council shall from time to time by resolution provide, and shall transmit copies of the minutes of each meeting to the President of the Council, to the Superintendent of the Reservation, to the Commissioner of Indian Affairs, and to all recognized District Councils of the Reservation.

Section 4. The Tribal Council Treasurer shall be the custodian of all moneys which come under the jurisdiction or control of the Tribal Council of the Northern Cheyenne. He shall pay out money in accordance with the orders and resolutions of the Council. He shall keep accounts of all receipts and disbursements and shall make written reports of same to the Tribal Council at each regular and special meeting. He shall be bonded in such an amount as the Council by resolution shall provide, such bond to be approved by the Commissioner of Indian Affairs. The books of the Tribal Council Treasurer shall be subject to inspection or audit by the direction of the Council or the Commissioner of Indian Affairs.

Section 5. The Sergeant at Arms shall be present at all regular and extra sessions and shall keep order in such meetings and shall perform such other duties as the Tribal Council may by resolution provide.

ARTICLE II – QUALIFICATIONS

Section 1. In order for a person to be eligible for the office of President of the Tribal Council he must be at least thirty (30) years of age and a member, by blood, of the Northern Cheyenne Tribe.

Section 2. Any person elected as a member of the Tribal Council must be at least twenty-one (21) years of age and a member of the Northern Cheyenne Tribe.

ARTICLE III - CERTIFICATION

Section 1. The Tribal Council shall appoint an election board which shall certify to the election of all members elected and this shall be done within five (5) days after the election.

Section 2. (Oath) I, _____, do solemnly swear that I will support and defend the Constitution of the United States against all enemies; carry out faithfully and impartially the duties of my office to the best of my ability; promote and protect the best interests of my Tribe, the Northern Cheyenne, in accordance with this Constitution and Bylaws.

This oath of office shall be administered by a Notary Public or Judge.

ARTICLE IV – SALARIES

Section 1. The salaries of the members or other officers of the Tribal Council of the Northern Cheyenne Tribe may be paid out of available funds within the exclusive control of the Tribal Council or out of any other available funds with the approval of the Secretary of the Interior in accordance with ordinances duly enacted, provided that no Tribal Council shall enact any ordinance increasing the salaries of councilmen during the existing term of office.

ARTICLE V – MEETINGS AND PROCEDURE

Section 1. The Tribal Council shall assemble on the first and third Mondays of each month.

Section 2. A majority of two-thirds (2/3) of the members of the Tribal Council must be present in order to constitute a quorum to do business.

Section 3. Extra sessions may be called by the President or by three members of the Tribal Council in writing to the President and when so-called two-thirds (2/3) of the members of the Tribal Council must be present to constitute a quorum, and the Tribal Council shall have power to transact business as in regular meetings.

Section 4. The presiding officer in meetings of the Tribal Council shall vote only in the case of a tie.

Section 5. Every order, resolution, or vote to which the concurrence fo the Tribal Council may be necessary (except on the question of adjournment) shall be presented to the President of the Tribal Council, and before the same shall take effect it shall be approved by him or being disapproved by him may become effective by being repassed by affirmative vote of seven members of the Tribal Council.

ARTICLE VI – ADOPTION OF CONSTITUTION AND BYLAWS

Section 1. This Constitution and the attached Bylaws when approved by a majority of the adult voters of the Northern Cheyenne Tribe voting in a special election called by the Secretary of the Interior in which at least 30 percent of the eligible voters vote, shall be submitted to the Secretary of the Interior for approval and shall be effective from the date of such approval.

ARTICLE VII – CODE OF ETHICS

Section 1. It is declared that the observance of high ethical standards by the President, Vice President, Secretary and Treasurer, and all members of the Tribal Council ("Tribal Officials") is essential to the conduct of the Tribal government. In order to promote such high standards of public service and to strengthen the confidence of the Tribal membership in Tribal government, the principles set forth in Section 2 below are adopted as a Code of Ethics for Tribal Officials.

Section 2. Every Tribal Official shall be guided by the following principles in discharging the duties and exercising the powers of office. Except as may be otherwise specifically required or permitted by Tribal or federal law, while in office every Tribal Official shall:

(a) discharge the duties and exercise the powers of office in good faith and in a manner which the Tribal Official believes will best serve the interests of the Tribe;

(b) not accept any compensation, gratuity, benefit or advantage (other than duly authorized emoluments of office) from any source other than the Tribe in return for exercising or abstaining from exercising any duty or right of office in any particular way;

(c) not use Tribal money, property or personnel for personal benefit;

(d) not disclose or use for personal gain any confidential information of the Tribe;

(e) not knowingly falsify, alter, conceal or destroy any official book, record, account or other document of the Tribe;

(f) not present, allow or pay any charge or claim against the Tribe which the Tribal Officials know to be improper; and

(g) not knowingly make any false statement in any official statement, report, certificate or other document, presented to or on behalf of Tribal government or the Tribal membership, which as an adverse effect on significant interest of the Tribe or its membership.

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APPENDIX C
RESERVATION TRAFFIC STATISTICS

Table 2b: Montana Highway 39 – Traffic Statistics by Each 10-Mile Average Road Segment Driven Annually.

						PER 10-MILE SECTION						
Road Segment	***Year***	***Miles***	***AADT****	Average Miles Driven per Day**	Average Miles Driven Per Year	(10 Mile Section) / (Total Miles)	10 / Miles * AMDY	**Yearly Average # of Accidents**	**Number of Injury Accidents**	**Number of Fatal Accidents**	**Number of Injuries**	**Number of Fatalities**
Lame Deer North to Border	1990-'94	4.24	1,200	5,088.0	1,857,120.0	2.358490566	4,380,000	**4.25**	**1.42**	**1.42**	**4.25**	**1.89**
	1995-'99		1,400	5,936.0	2,166,640.0	2.358490566	5,110,000	**1.89**	**0.00**	**1.42**	**1.42**	**1.89**
	2000-'01		1,500	6,360.0	2,321,400.0	2.358490566	5,475,000	**0.94**	**0.00**	**0.47**	**1.89**	**0.47**
	1990-2001	*4.24*	*1,367*	*5,794.7*	2,115,053.3	2.358490566	4,988,333	**2.36**	**0.47**	**1.10**	**2.52**	**1.42**
Res border to Colstrip	1990-'94	18.103	1,500	27,154.5	9,911,392.5	0.552394631	5,475,000	**3.65**	**1.44**	**0.00**	**1.88**	**0.00**
	1995-'99		2,600	47,067.8	17,179,747.0	0.552394631	9,490,000	**3.54**	**1.33**	**0.22**	**2.65**	**0.22**
	2000-'01		2,600	47,067.8	17,179,747.0	0.552394631	9,490,000	**1.10**	**0.55**	**0.00**	**0.55**	**0.00**
	1990-2001	*18.103*	*2,233*	40,430.0	14,756,962.2	0.552394631	8,151,667	**2.76**	**1.10**	**0.07**	**1.69**	**0.07**
Colstrip to I-94	1990-'94	28.766	1,100	31,642.6	11,549,549.0	0.347632622	4,015,000	**2.71**	**0.83**	**0.00**	**1.32**	**0.00**
	1995-'99		1,900	54,655.4	19,949,221.0	0.347632622	6,935,000	**3.20**	**1.18**	**0.00**	**2.02**	**0.00**
	2000-'01		1,500	43,149.0	15,749,385.0	0.347632622	5,475,000	**1.88**	**0.49**	**0.00**	**0.70**	**0.00**
	1990-2001	*28.766*	*1,500*	43,149.0	15,749,385.0	0.347632622	5,475,000	**2.60**	**0.83**	**0.00**	**1.34**	**0.00**

* AADT -- Average Daily Traffic Volume
** Calculated by multiplying miles X AADT

APPENDIX C
RESERVATION TRAFFIC STATISTICS

TABLE 2a: Accident Statistics per Each Million Miles Driven Annually, 1900 - 2001. Montana Highway 39, From Lame Deer to the I-94 Junction.

					Yearly Average***					
Road Segment	***Year***	***Miles***	***AADT****	Average Miles Driven per Day**	Average Miles Driven Per Year	Accidents per 1,000,000 Miles Driven***	Injury Accidents per 1,000,000 Miles Driven	Fatal Accidents per 1,000,000 Miles Driven	Injuries per 1,000,000 Miles Driven	Fatalities per 1,000,000 Miles Driven
Lame Deer North to Reservation Border	1990-'94	4.24	1,200	5,088.0	1,857,120.0	0.969	0.323	0.323	0.969	0.431
	1995-'99		1,400	5,936.0	2,166,640.0	0.369	0.000	0.277	0.277	0.369
	2000-'01		1,500	6,360.0	2,321,400.0	0.172	0.000	0.086	0.345	0.086
	1990-2001	*4.24*	*1,367*	*5,794.7*	2,115,053.3	*0.504*	*0.108*	*0.229*	*0.530*	*0.295*
Res Border to Colstrip	1990-'94	18.103	1,500	27,154.5	9,911,392.5	1.427	0.562	0.000	0.735	0.000
	1995-'99		2,600	47,067.8	17,179,747.0	1.211	0.454	0.076	0.908	0.076
	2000-'01		2,600	47,067.8	17,179,747.0	0.378	0.189	0.000	0.189	0.000
	1990-2001	*18.103*	*2,233*	40,430.0	14,756,962.2	*1.005*	*0.402*	*0.025*	*0.611*	*0.025*
Colstrip to I-94	1990-'94	28.766	1,100	31,642.6	11,549,549.0	0.413	0.127	0.000	0.201	0.000
	1995-'99		1,900	54,655.4	19,949,221.0	0.548	0.202	0.000	0.345	0.000
	2000-'01		1,500	43,149.0	15,749,385.0	0.396	0.103	0.000	0.147	0.000
	1990-2001	*28.766*	*1,500*	43,149.0	15,749,385.0	*0.452*	*0.144*	*0.000*	*0.231*	*0.000*

* AADT -- Average Daily Traffic Volume
** Calculated by multiplying miles X AADT
*** Calculated by dividing Incident Numbers by Annual Average Miles Driven per Year X 1,000,000

APPENDIX C
RESERVATION TRAFFIC STATISTICS

Table 2: Traffic Volumes, Miles Driven, and Accident Statistics, 1900 - 2001. Montana Highway 39, From Lame Deer to the I-94 Junction.

Road Segment	*Year*	*Miles*	*AADT**	Average Miles Driven per Day**	Average Miles Driven Per Year	Yearly Average # of Accidents	Number of Injury Accidents	Number of Fatal Accidents	Number of Injuries	Number of Fatalities
Lame Deer North to Border	1990-'94	4.24	1200	5,088.0	1,857,120.0	1.8	0.6	0.6	1.8	0.8
	1995-'99		1400	5,936.0	2,166,640.0	0.8	0	0.6	0.6	0.8
	2000-'01		1500	6,360.0	2,321,400.0	0.4	0	0.2	0.8	0.2
	1990-2001	*4.24*	1367	*5,794.7*	*2,115,053.3*	*1.000*	*0.200*	*0.467*	*1.067*	*0.600*
Res border to Colstrip	1990-'94	18.103	700	12,672.1	4,625,316.5	6.6	2.6	0	3.4	0
	1995-'99		800	14,482.4	5,286,076.0	6.4	2.4	0.4	4.8	0.4
	2000-'01		800	14,482.4	5,286,076.0	2	1	0	1	0
	1990-2001	*18.103*	*767*	*13,879.0*	*5,065,822.8*	*5.000*	*2.000*	*0.133*	*3.067*	*0.133*
Colstrip to I-94	1990-'94	28.766	1800	51,778.8	18,899,262.0	7.8	2.4	0	3.8	0
	1995-'99		1600	46,025.6	16,799,344.0	9.2	3.4	0	5.8	0
	2000-'01		1300	37,395.8	13,649,467.0	5.4	1.4	0	2	0
	1990-2001	*28.766*	*1,567*	45,066.7	16,449,357.7	*7.467*	*2.400*	*0.000*	*3.867*	*0.000*

* AADT -- Average Daily Traffic Volume

** Calculated by multiplying miles X AADT

APPENDIX C
RESERVATION TRAFFIC STATISTICS

TABLE 1: Traffic Volumes, Miles Driven, and Accident Statistics, 1900 - 2001. U.S. Highway 212, Montana, From the I-90 Junction to Broadus.

Road Segment	Year	Miles	AADT*	Average Miles Driven per Day**	Average Miles Driven Per Year	Yearly Average # of Accidents	Number of Injury Accidents	Number of Fatal Accidents	Number of Injuries	Number of Fatalities
I-90 to Busby	1990-'94	25.171	1,200	30,205.2	11,024,898.0	9.2	4	1	8	1
	1995-'99		1,400	35,239.4	12,862,381.0	4	1.2	0.6	3.4	0.8
	2000-'01		1,700	42,790.7	15,618,605.5	2.4	1.2	0.2	1.6	0.2
	1990-2001	*25.171*	*1,433*	*36,078.4*	*13,168,628.2*	*5.200*	*2.133*	*0.600*	*4.333*	*0.667*
Busby to Lame Deer	1990-'94	16.911	1,500	25,366.5	9,258,772.5	4.6	1.8	0.6	3.4	1
	1995-'99		2,600	43,968.6	16,048,539.0	6.2	3.8	0.6	8.8	0.6
	2000-'01		2,600	43,968.6	16,048,539.0	3	0.8	0.4	1.8	0.4
	1990-2001	*16.911*	*2,233*	*37,767.9*	*13,785,283.5*	*4.600*	*2.133*	*0.533*	*4.667*	*0.667*
Lame Deer to Ashland	1990-'94	19.99	1,100	21,989.0	8,025,985.0	9.8	4	0.6	5.6	1
	1995-'99		1,900	37,981.0	13,863,065.0	12.4	5.2	0.4	8	0.4
	2000-'01		1,500	29,985.0	10,944,525.0	4.2	1.6	0	3.2	0
	1990-2001	*19.99*	*1,500*	*29,985.0*	*10,944,525.0*	*8.800*	*3.600*	*0.333*	*5.600*	*0.467*
Ashland to Broadus	1990-'94	41.529	600	24917.4	9,094,851.0	9.4	2.8	0.8	5.4	0.8
	1995-'99	41.529	900	37376.1	13,642,276.5	12.2	4.2	0.4	6.2	0.6
	2000-'01		900	37376.1	13,642,276.5	6.2	2.6	0.4	3	0.4
	1990-2001	*41.529*	*800*	*33,223.2*	*12,126,468.0*	*0.794*	*0.269*	*0.049*	*0.423*	*0.054*

* AADT -- Average Daily Traffic Volume

** Calculated by multiplying miles X AADT

APPENDIX C
RESERVATION TRAFFIC STATISTICS

TABLE 1a: Accident Statistics per Each Million Miles Driven Annually, 1900 - 2001. U.S. Highway 212, Montana, From the I-90 Junction to Broadus.

					Yearly Average***					
Road Segment	***Year***	***Miles***	***AADT****	Average Miles Driven per Day**	Average Miles Driven Per Year	Accidents per 1,000,000 Miles Driven***	Injury Accidents per 1,000,000 Miles Driven	Fatal Accidents per 1,000,000 Miles Driven	Injuries per 1,000,000 Miles Driven	Fatalities per 1,000,000 Miles Driven
I-90 to Busby	1990-'94	25.171	1,200	30,205.2	11,024,898.0	0.834	0.363	0.091	0.726	0.091
	1995-'99		1,400	35,239.4	12,862,381.0	0.311	0.093	0.047	0.264	0.062
	2000-'01		1,700	42,790.7	15,618,605.5	0.154	0.077	0.013	0.102	0.013
	1990-2001	*25.171*	*1,433*	*36,078.4*	*13,168,628.2*	*0.433*	*0.178*	*0.050*	*0.364*	*0.055*
Busby to Lame Deer	1990-'94	16.911	1,500	25,366.5	9,258,772.5	0.497	0.194	0.065	0.367	0.108
	1995-'99		2,600	43,968.6	16,048,539.0	0.386	0.237	0.037	0.548	0.037
	2000-'01		2,600	43,968.6	16,048,539.0	0.187	0.050	0.025	0.112	0.025
	1990-2001	*16.911*	*2,233*	*37,767.9*	*13,785,283.5*	*0.357*	*0.160*	*0.042*	*0.343*	*0.057*
Lame Deer to Ashland	1990-'94	19.99	1,100	21,989.0	8,025,985.0	1.221	0.498	0.075	0.698	0.125
	1995-'99		1,900	37,981.0	13,863,065.0	0.894	0.375	0.029	0.577	0.029
	2000-'01		1,500	29,985.0	10,944,525.0	0.384	0.146	0.000	0.292	0.000
	1990-2001	*19.99*	*1,500*	*29,985.0*	*10,944,525.0*	*0.833*	*0.340*	*0.035*	*0.522*	*0.051*
Ashland to Broadus	1990-'94	41.529	600	24,917.4	9,094,851.0	1.034	0.440	0.110	0.880	0.110
	1995-'99		900	37,376.1	13,642,276.5	0.894	0.088	0.044	0.249	0.059
	2000-'01		900	37,376.1	13,642,276.5	0.454	0.191	0.029	0.220	0.029
	1990-2001	*41.529*	*800*	*33,223.2*	*12,126,468.0*	*0.794*	*0.269*	*0.049*	*0.423*	*0.054*

* AADT -- Average Daily Traffic Volume

** Calculated by multiplying miles X AADT

*** Calculated by dividing Incident Numbers by Annual Average Miles Driven per Year X 1,000,000

APPENDIX C
RESERVATION TRAFFIC STATISTICS

Table 1b: Accident Statistics per Each 10-Mile Average Road Segment Driven Annually, 1900 - 2001. U.S. Highway 212, Montana, From the I-90 Junction to Broadus.

								PER 10-MILE SECTION				
Road Segment	***Year***	***Miles***	***AADT****	Average Miles Driven per Day**	Average Miles Driven Per Year	(10 Mile Segment) / (Total Miles)	10 / Miles * AMDY	**Yearly Average # of Accidents**	**Number of Injury Accidents**	**Number of Fatal Accidents**	**Number of Injuries**	**Number of Fatalities**
I-90 to Busby	1990-'94	25.171	1,200	30,205.2	11,024,898.0	0.39728259	4,380,000	**3.7**	**1.6**	**0.4**	**3.2**	**0.4**
	1995-'99		1,400	35,239.4	12,862,381.0	0.39728259	5,110,000	**1.6**	**0.5**	**0.2**	**1.4**	**0.3**
	2000-'01		1,700	42,790.7	15,618,605.5	0.39728259	6,205,000	**1.0**	**0.5**	**0.1**	**0.6**	**0.1**
	1990-2001	*25.171*	*1,433*	*36,078.4*	13,168,628.2	0.39728259	5,231,667	***2.1***	***0.8***	***0.2***	***1.7***	***0.3***
Busby to Lame Deer	1990-'94	16.911	1,500	25,366.5	9,258,772.5	0.59133109	5,475,000	**2.7**	**1.1**	**0.4**	**2.0**	**0.6**
	1995-'99		2,600	43,968.6	16,048,539.0	0.59133109	9,490,000	**3.7**	**2.2**	**0.4**	**5.2**	**0.4**
	2000-'01		2,600	43,968.6	16,048,539.0	0.59133109	9,490,000	**1.8**	**0.5**	**0.2**	**1.1**	**0.2**
	1990-2001	*16.911*	*2,233*	37,767.9	13,785,283.5	0.59133109	8,151,667	***2.7***	***1.3***	***0.3***	***2.8***	***0.4***
Lame Deer to Ashland	1990-'94	19.99	1,100	21,989.0	8,025,985.0	0.50025013	4,015,000	**4.9**	**2.0**	**0.3**	**2.8**	**0.5**
	1995-'99		1,900	37,981.0	13,863,065.0	0.50025013	6,935,000	**6.2**	**2.6**	**0.2**	**4.0**	**0.2**
	2000-'01		1,500	29,985.0	10,944,525.0	0.50025013	5,475,000	**2.1**	**0.8**	**0.0**	**1.6**	**0.0**
	1990-2001	*19.99*	*1,500*	29,985.0	10,944,525.0	0.50025013	5,475,000	***4.4***	***1.8***	***0.2***	***2.8***	***0.2***
Ashland to Broadus	1990-'94	41.529	600	24917.4	9094851	0.24079559	2,190,000	**2.3**	**0.7**	**0.2**	**1.3**	**0.2**
	1995-'99	41.529	900	37376.1	13642276.5	0.24079559	3,285,000	**2.9**	**1.0**	**0.1**	**1.5**	**0.1**
	2000-'01		900	37376.1	13642276.5	0.24079559	3,285,000	**1.5**	**0.6**	**0.1**	**0.7**	**0.1**
	1990-2001	41.529	800	33223.2	12126468	0.24079559	2,920,000	**2.2**	**0.8**	**0.1**	**1.2**	**0.1**

* AADT -- Average Daily Traffic Volume

** Calculated by multiplying miles X AADT

Appendix D
Table 9

Monthly Averages of Water-Quality Parameters for Bighorn River near Hardin, Montana.
From USGS Discrete, Non-Continuous Samples taken at USGS Gage 06294000, throughout the Period 1969-1999

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00010 - TEMPERATURE, WATER (DEG. C)	0.1	0.2	3.4	9.6	14.8	17.8	21.3	20.8	16.7	11.4	3.4	0.5
# 00020 - TEMPERATURE, AIR, DEGREES CELSIUS	-3.4	1.0	5.8	9.7	17.8	21.3	23.7	20.4	18.2	12.5	4.2	-1.9
# 00032 - CLOUD COVER (PERCENT)					80.0	0.0	47.5	0.0	1.7		50.0	
# 00035 - WIND SPEED (MPH)					3.3	5.0	0.8	0.0	0.0		0.0	
# 00060 - DISCHARGE, CUBIC FEET PER SECOND	189.8	314.3	797.6	731.3	808.9	1211.4	315.5	170.6	215.2	211.1	211.3	152.3
# 00061 - DISCHARGE, INSTANTANEOUS, CUBIC FEET PER SECOND	181.0	166.2	328.0	415.9	804.9	793.0	273.9	122.6	123.1	157.2	177.9	157.1
# 00065 - GAGE HEIGHT, FEET	3.3	3.6	2.9	2.7	3.4	3.6	2.7	2.5	2.5	2.6	2.5	3.0
# 00080 - COLOR (PLATINUM-COBALT)	2.5	17.5	16.3	13.7	12.2	9.7	7.5	7.0	4.1	6.7	2.0	2.8
# 00095 - SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C)	754.1	794.9	830.0	956.6	692.9	490.0	636.5	707.7	705.1	695.0	716.9	789.8
# 00400 - PH, WATER, WHOLE, FIELD, STANDARD UNITS	8.1	8.2	8.1	8.2	8.2	8.1	8.3	8.3	8.3	8.1	8.2	8.1
# 00403 - PH, WATER, WHOLE, LABORATORY, STANDARD UNITS	8.3				8.2	8.2	8.2	8.0	8.2		8.4	8.0
# 00405 - CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	4.6	4.1	5.9	5.0	6.4	4.6	2.8	2.0	2.4	5.2	2.8	8.2
# 00410 - ACID NEUTRALIZING CAPACITY (ANC)	238.7	223.5	214.8	231.3	211.4	190.5	198.5	195.7	201.4	211.4	223.6	244.9
# 00440 - ACID NEUTRALIZING CAPACITY (ANC)	288.5	278.2	259.3	278.4	255.1	233.1	240.2	236.4	246.2	257.4	271.0	295.9
# 00445 - ACID NEUTRALIZING CAPACITY (ANC)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2	0.0	0.0	0.0	0.0
# 00608 - NITROGEN AMMONIA DISSOLVED (MG/L AS N)	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0		0.0	0.0
# 00613 - NITROGEN, NITRITE, DISSOLVED, MG/L AS N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
# 00618 - NITROGEN NITRATE DISSOLVED (MG/L AS N)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
# 00631 - NITROGEN NITRITE PLUS NITRATE DISSOLVED (MG/L AS N)	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1		
# 00660 - PHOSPHATE ORTHO DISSOLVED (MG/L AS PO4)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
# 00665 - PHOSPHORUS TOTAL (MG/L AS P)	0.0	0.1	0.1	0.1	0.4	0.1	0.1	0.2	0.0			
# 00666 - PHOSPHORUS DISSOLVED (MG/L AS P)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
# 00671 - PHOSPHORUS ORTHOPHOSPHATE DISSOLVED (MG/L AS P)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
# 00900 - HARDNESS TOTAL (MG/L AS CA03)	344.4	330.7	325.9	358.8	306.6	231.2	270.5	281.3	296.3	308.4		
# 00902 - NONCARBONATE HARDNESS WATER WHOLE TOTAL, FIELD, (MG/L AS CACO3)	104.6	108.0	110.8	127.1	95.1	40.8	72.0	87.1	94.0	97.1		
# 00915 - CALCIUM DISSOLVED (MG/L AS CA)	75.4	76.7	68.5	71.2	65.2	55.6	59.1	57.9	61.1	64.3		
# 00925 - MAGNESIUM DISSOLVED (MG/L AS MG)	36.9	34.0	37.6	44.0	33.0	21.8	31.2	34.1	34.5	35.9		
# 00930 - SODIUM DISSOLVED (MG/L AS NA)	48.6	54.8	74.2	88.6	51.7	20.4	40.2	45.8	45.8	45.5		
# 00931 - SODIUM ADSORPTION RATIO	1.2	1.3	1.8	2.0	1.3	0.6	1.0	1.2	1.1	1.1		
# 00932 - SODIUM, PERCENT	23.6	26.3	32.7	34.1	26.0	16.0	22.1	24.9	24.5	23.9		

Appendix D
Table 9

Monthly Averages of Water-Quality Parameters for Bighorn River near Hardin, Montana.
From USGS Discrete, Non-Continuous Samples taken at USGS Gage 06294000, throughout the Period 1969-1999

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00933 - SODIUM PLUS POTASSIUM DISSOLVED (MG/L AS NA)						35.0	52.0	61.0	70.0	52.0		
# 00935 - POTASSIUM DISSOLVED (MG/L AS K)	3.4	3.7	4.1	4.1	3.1	1.7	2.8	3.0	2.6	2.7		
# 00940 - CHLORIDE DISSOLVED (MG/L AS CL)	3.6	4.0	4.6	5.3	3.3	1.8	3.3	3.7	3.7	3.2		
# 00945 - SULFATE DISSOLVED (MG/L AS SO4)	203.6	213.6	262.8	308.1	190.7	83.0	160.4	186.4	191.4	189.8		
# 00950 - FLUORIDE DISSOLVED (MG/L AS F)	0.2	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2		
# 00955 - SILICA DISSOLVED (MG/L AS SIO2)	8.8	8.5	7.9	8.7	7.8	6.7	6.6	6.2	6.4	6.9		

Appendix D
Table 10
Monthly Averages of Water-Quality Parameters for Tongue River at Stateline, from USGS Discrete, Non-Continuous Samples taken at USGS Gage 06306300, throughout the Period 1985-1999

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00010 - TEMPERATURE, WATER (DEG. C)	0.0	0.0	5.5	8.6	13.1	16.0	21.8	20.3	15.1	10.6	2.8	0.5
# 00020 - TEMPERATURE, AIR, DEGREES CELSIUS	2.6	6.8	8.9	10.4	16.8	19.9	26.6	23.5	20.6	12.7	4.8	1.8
# 00025 - BAROMETRIC PRESSURE (MM OF HG)	663.0	670.0	680.0		670.4	674.0	669.0	679.0	671.0		670.5	670.5
# 00032 - CLOUD COVER (PERCENT)					48.6	66.7	0.0	40.0	23.3		27.5	100.0
# 00035 - WIND SPEED (MPH)					0.6	3.3	5.0	5.0	5.0		3.5	
# 00061 - DISCHARGE, INSTANTANEOUS, CUBIC FEET PER SECOND	176.6	211.5	264.8	326.4	1338.4	1721.9	323.5	207.7	243.9	240.3	238.1	154.5
# 00065 - GAGE HEIGHT, FEET	3.3	3.7	2.9	3.0	4.6	5.4	3.2	2.9	2.9	2.9	2.9	3.0
# 00095 - SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C)	683.9	654.7	767.5	698.4	299.4	292.9	546.4	698.8	611.7	655.3	625.7	685.2
# 00300 - OXYGEN DISSOLVED (MG/L)	13.1		11.8		8.7	8.5	7.5	9.3	9.6		13.4	11.8
# 00400 - PH, WATER, WHOLE, FIELD, STANDARD UNITS	8.3	8.3	8.2		8.0	8.4	8.3	8.2	8.4		8.5	8.4
# 00403 - PH, WATER, WHOLE, LABORATORY, STANDARD UNITS	8.2	8.0			7.9	8.0	8.1	8.1	8.4		8.2	8.1
# 00452 - CARBONATE, WATER, DISSOLVED, INCREMENTAL TITRATION, FIELD, MG/L AS CO3									6.0			
# 00453 - BICARBONATE, WATER, DISSOLVED, INCREMENTAL TITRATION, FIELD, MG/L AS HCO3									243.0			
# 00600 - NITROGEN TOTAL (MG/L AS N)												1.0
# 00605 - NITROGEN ORGANIC TOTAL (MG/L AS N)											0.4	0.4
# 00610 - NITROGEN AMMONIA TOTAL (MG/L AS N)			0.1		0.0	0.0	0.0	0.1	0.0		0.0	0.1
# 00625 - NITROGEN AMMONIA PLUS ORGANIC TOTAL (MG/L AS N)			0.5		0.7	0.6	0.7	0.2	0.8		0.6	0.4
# 00630 - NITROGEN NITRITE PLUS NITRATE TOTAL (MG/L AS N)			0.3		0.1	0.1	0.1	0.1	0.1		0.2	0.2
# 00631 - NITROGEN NITRITE PLUS NITRATE DISSOLVED (MG/L AS N)					0.1							0.6
# 00665 - PHOSPHORUS TOTAL (MG/L AS P)			0.1		0.2	0.1	0.0	0.1	0.0		0.1	0.1
# 00670 - PHOSPHORUS ORGANIC TOTAL (MG/L AS P)			0.1		0.1		0.0					0.1
# 00915 - CALCIUM DISSOLVED (MG/L AS CA)	66.0	61.0			25.7	33.2	44.0	66.0	58.0		63.5	71.0
# 00925 - MAGNESIUM DISSOLVED (MG/L AS MG)	34.0	37.0			10.3	15.6	22.0	43.3	34.0		41.0	45.0
# 00930 - SODIUM DISSOLVED (MG/L AS NA)	20.0	26.0			6.9	10.9	15.0	34.0	21.5		30.5	29.0
# 00935 - POTASSIUM DISSOLVED (MG/L AS K)	2.1	5.1			1.3	1.7	1.8	4.4	2.6		3.0	2.0
# 00940 - CHLORIDE DISSOLVED (MG/L AS CL)	2.8	4.2			1.5	1.4	2.1	4.2	3.4		3.4	3.3
# 00945 - SULFATE DISSOLVED (MG/L AS SO4)	110.0	140.0			30.0	48.8	66.0	180.0	115.0		160.0	160.0
# 00950 - FLUORIDE DISSOLVED (MG/L AS F)	0.2	0.2			0.1	0.1	0.2	0.2	0.2		0.2	0.3

Appendix D
Table 10
Monthly Averages of Water-Quality Parameters for Tongue River at Stateline, from USGS Discrete, Non-Continuous Samples taken at USGS Gage 06306300, throughout the Period 1985-1999

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00955 - SILICA DISSOLVED (MG/L AS SIO2)	7.2	10.0			7.9	7.1	7.6	7.3	5.6		4.6	8.8
# 01000 - ARSENIC DISSOLVED (UG/L AS AS)			1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0
# 01005 - BARIUM DISSOLVED (UG/L AS BA)			100.0		53.0	45.0	63.0	53.0	45.3		53.0	88.0
# 01010 - BERYLLIUM DISSOLVED (UG/L AS BE)					0.5	0.5		0.5	0.6			
# 01020 - BORON DISSOLVED (UG/L AS B)					23.3	50.0		95.0	70.0			
# 01025 - CADMIUM DISSOLVED (UG/L AS CD)			1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.5
# 01030 - CHROMIUM DISSOLVED (UG/L AS CR)			1.0		1.2	1.0	1.0	1.3	1.0		1.0	1.0
# 01035 - COBALT DISSOLVED (UG/L AS CO)					3.0	3.0		3.0	3.0			
# 01040 - COPPER DISSOLVED (UG/L AS CU)					2.0	2.0		1.5	1.5			
# 01046 - IRON DISSOLVED (UG/L AS FE)			20.0		49.6	15.0	5.5	10.0	7.0		6.0	95.0
# 01049 - LEAD DISSOLVED (UG/L AS PB)			5.0		2.3	1.0	5.0	2.3	2.3		3.0	3.5
# 01056 - MANGANESE DISSOLVED (UG/L AS MN)					8.0	6.0		8.5	7.0			
# 01075 - SILVER DISSOLVED (UG/L AS AG)			1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0
# 01080 - STRONTIUM DISSOLVED (UG/L AS SR)					113.0	280.0		540.0	420.0			
# 01090 - ZINC DISSOLVED (UG/L AS ZN)					5.3	4.0		3.0	5.5			
# 01106 - ALUMINUM DISSOLVED (UG/L AS AL)					100.0	10.0		10.0	10.0			
# 01130 - LITHIUM DISSOLVED (UG/L AS LI)					5.0	13.0		19.5	19.0			
# 01145 - SELENIUM DISSOLVED (UG/L AS SE)			1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0
# 31625 - FECAL COLIFORM .7 UM-MF (COL./ 100 ML)			2.0		165.0		86.5	290.0	77.0		5.5	18.0
# 39036 - ALKALINITY, WATER, DISSOLVED, FIXED ENDPOINT, FIELD, AS CACO3, MG/L									206.0			
# 39086 - ALKALINITY, WATER, DISSOLVED, TOTAL, INCREMENTAL TITRATION, FIELD, MG/L AS CACO3									210.0			
# 39720 - PICLORAM, WATER, UNFILTERED, RECOVERABLE, UG/L						0.0	0.0	0.0	0.0			
# 39730 - 2,4-D, TOTAL (UG/L)						0.0	0.0	0.0	0.0			
# 39740 - 2,4,5-T, TOTAL (UG/L)						0.0	0.0	0.0	0.0			
# 39760 - SILVEX, TOTAL (UG/L)						0.0	0.0	0.0	0.0			
# 71886 - PHOSPHORUS TOTAL (MG/L AS PO4)											0.2	0.2
# 71887 - NITROGEN, TOTAL (MG/L AS NO3)			3.5									4.4
# 71890 - MERCURY, DISSOLVED (UG/L AS HG)			0.1		0.2	0.1	0.1	0.2	0.1		0.1	0.2
# 82052 - DICAMBA, TOTAL (UG/L)						0.0	0.0	0.0	0.0			
# 82183 - 2,4-DP TOTAL (UG/L)						0.0	0.0	0.0	0.0			
# 90410 - ACID NEUTRALIZING CAPACITY (ANC)	230.0	223.0			93.8	121.6	160.0	237.3	213.5		234.0	250.0

Appendix D
Table 12
Monthly Averages of Water-Quality Parameters for Otter Creek, near Ashland, Montana,.
From USGS Discrete, Non-Continuous Samples taken at USGS Gage 6307740, throughout the Period 1974-1995

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00010 - TEMPERATURE, WATER (DEG. C)	0.1	0.1	2.4	8.6	14.2	21.0	23.4	22.0	15.9	9.0	3.2	0.2
# 00020 - TEMPERATURE, AIR, DEGREES CELSIUS	-2.5	-0.8	7.8	9.6	17.9	23.2	27.1	24.0	19.2	12.1	8.0	-3.6
# 00025 - BAROMETRIC PRESSURE (MM OF HG)	683.5	680.7	676.0	685.4	684.0	682.5	686.2	684.3	691.5	685.0	684.2	683.0
# 00032 - CLOUD COVER (PERCENT)	100.0	33.3	60.0	36.0	37.5	33.0	12.5	28.0	75.0	32.0	35.0	0.0
# 00035 - WIND SPEED (MPH)	1.0	7.7	5.0	2.8	1.2	2.5	1.2	1.2	5.0	0.2	3.8	1.7
# 00060 - DISCHARGE, CUBIC FEET PER SECOND									0.3			
# 00061 - DISCHARGE, INSTANTANEOUS, CUBIC FEET PER SECOND	9.7	4.5	47.7	6.2	28.8	4.6	1.8	1.1	1.1	1.0	2.4	2.7
# 00065 - GAGE HEIGHT, FEET	3.4	3.1	3.8	3.5	3.0	3.0	2.8	2.6	2.8	3.1	2.8	3.4
# 00070 - TURBIDITY (JACKSON CANDLE UNITS)	23.8	14.0	96.5	20.2	53.4	24.5	21.7	32.0	15.8	9.0	22.3	7.8
# 00095 - SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C)	2792.9	2629.2	1781.4	2854.0	2968.8	3058.1	2805.7	2836.7	2773.6	2605.0	2730.8	3180.7
# 00300 - OXYGEN DISSOLVED (MG/L)	11.8	11.4	12.2	11.0	8.1	6.8	6.4	5.9	9.3	8.8	11.7	12.1
# 00301 - OXYGEN DISSOLVED (% OF SATURATION)	86.4	84.5	94.6	96.1	91.4	80.1	93.8	68.8	96.3	84.1	96.0	92.6
# 00310 - BIOCHEMICAL OXYGEN DEMAND, 5-DAY AT 20 DEGREES CELSIUS (MG/L)	3.0	1.8	4.3	2.5	2.7	2.1	2.3	2.0	1.5	2.1	1.2	0.9
# 00400 - PH, WATER, WHOLE, FIELD, STANDARD UNITS	8.2	8.1	8.1	8.4	8.3	8.3	8.4	8.4	8.5	8.4	8.5	8.2
# 00403 - PH, WATER, WHOLE, LABORATORY, STANDARD UNITS	8.0	8.0	8.3	8.4	8.2	8.2	8.3	8.3	8.5	8.4	8.4	8.2
# 00405 - CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	9.2	12.5	6.9	7.0	7.3	5.0	5.1	4.0	3.4	5.5	4.7	7.1
# 00410 - ACID NEUTRALIZING CAPACITY (ANC), CACO3	567.9	542.9	299.4	488.4	481.6	462.6	526.1	546.2	509.1	542.4	539.0	611.6
# 00440 - ACID NEUTRALIZING CAPACITY (ANC), HCO3	598.5	616.5	351.0	549.2	513.2	544.2	611.0	678.7	566.2	672.0	644.7	737.2
# 00445 - ACID NEUTRALIZING CAPACITY (ANC), WATER, UNFILTERED, CARBONATE	0.0	2.2	0.0	9.0	0.0	10.0	9.0	10.7	34.2	0.8	4.3	0.0
# 00515 - RESIDUE, TOTAL FILTERABLE, DRIED AT 105 DEGREES CELSIUS (MG/L)											2650.0	2600.0
# 00530 - RESIDUE, TOTAL NON FILTERABLE (MG/L)											4.0	35.0
# 00600 - NITROGEN TOTAL (MG/L AS N)	1.7	1.4	2.2	0.9	1.4	1.7	1.3	1.3	1.1	0.8	1.0	0.9
# 00605 - NITROGEN ORGANIC TOTAL (MG/L AS N)	1.0	0.6	1.5	0.7	1.1	1.6	1.2	1.3	1.0	0.8	0.8	0.5
# 00608 - NITROGEN AMMONIA DISSOLVED (MG/L AS N)	0.0			0.0		0.0	0.0	0.0		0.0		
# 00610 - NITROGEN AMMONIA TOTAL (MG/L AS N)	0.2	0.1	0.3	0.1	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.1
# 00613 - NITROGEN, NITRITE, DISSOLVED, MG/L AS N	0.0			0.0		0.0	0.0	0.0		0.0		
# 00615 - NITROGEN, NITRITE, TOTAL, MG/L AS N	0.0		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.1
# 00618 - NITROGEN NITRATE DISSOLVED (MG/L AS N)	0.1					0.0	0.0			0.4		
# 00625 - NITROGEN AMMONIA PLUS ORGANIC TOTAL (MG/L AS N)	0.9	0.8	1.5	1.0	1.1	1.2	1.1	1.2	1.0	0.8	0.9	0.6
# 00630 - NITROGEN NITRITE PLUS NITRATE TOTAL (MG/L AS N)	0.5	0.6	0.3	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.2	0.4
# 00631 - NITROGEN NITRITE PLUS NITRATE DISSOLVED (MG/L AS N)	0.2			0.0		0.0	0.1	0.0		0.2		
# 00650 - PHOSPHATE TOTAL (MG/L AS PO4)						0.3	0.2					
# 00665 - PHOSPHORUS TOTAL (MG/L AS P)	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0

Appendix D
Table 12
Monthly Averages of Water-Quality Parameters for Otter Creek, near Ashland, Montana,.
From USGS Discrete, Non-Continuous Samples taken at USGS Gage 6307740, throughout the Period 1974-1995

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00671 - PHOSPHORUS ORTHOPHOSPHATE DISSOLVED (MG/L AS P)	0.0			0.0		0.0	0.0	0.0		0.0		
# 00681 - CARBON ORGANIC DISSOLVED (MG/L AS C)	11.0	11.0	7.2	8.4	10.4	8.5	11.5	10.0	11.2	10.1	7.0	6.8
# 00689 - CARBON, ORGANIC, PARTICULATE, TOTAL, MILLIGRAMS PER LITER	0.2	0.8	0.6	0.1	1.4	1.1	0.4	0.5	0.7	1.1	0.4	0.3
# 00900 - HARDNESS TOTAL (MG/L AS CA03)	895.7	908.3	507.1	901.2	863.3	895.7	877.1	865.0	777.5	796.7	870.0	1025.7
# 00902 - NONCARBONATE HARDNESS WATER WHOLE TOTAL, FIELD	359.9	383.3	211.9	422.9	391.1	432.9	357.1	322.5	274.3	256.2	345.0	412.9
# 00915 - CALCIUM DISSOLVED (MG/L AS CA)	96.3	96.3	67.1	91.6	86.2	76.9	65.6	70.8	61.5	69.3	75.8	100.5
# 00925 - MAGNESIUM DISSOLVED (MG/L AS MG)	145.4	146.1	94.0	157.7	155.2	178.8	161.4	155.0	149.2	144.7	150.0	183.6
# 00930 - SODIUM DISSOLVED (MG/L AS NA)	346.7	335.6	223.7	373.8	388.5	425.6	394.6	403.0	384.2	370.7	368.9	431.8
# 00931 - SODIUM ADSORPTION RATIO	5.0	5.2	3.7	5.4	5.4	5.9	6.1	5.8	5.8	5.8	5.9	5.9
# 00932 - SODIUM, PERCENT	44.1	45.7	43.9	47.0	47.2	49.1	49.9	49.0	49.9	49.9	49.0	47.1
# 00933 - SODIUM PLUS POTASSIUM DISSOLVED (MG/L AS NA)	490.0		290.0		480.0	460.0	430.0		360.0	530.0		470.0
# 00935 - POTASSIUM DISSOLVED (MG/L AS K)	17.0	16.9	14.1	16.7	16.6	17.5	18.4	19.1	22.1	20.2	19.3	20.7
# 00940 - CHLORIDE DISSOLVED (MG/L AS CL)	12.9	12.3	8.9	11.9	13.8	16.2	14.3	16.2	21.6	15.1	13.2	14.5
# 00945 - SULFATE DISSOLVED (MG/L AS SO4)	1075.8	1036.7	708.9	1143.1	1167.5	1286.9	1139.2	1100.0	1050.8	972.0	1046.7	1289.1
# 00950 - FLUORIDE DISSOLVED (MG/L AS F)	0.7	0.7	0.5	0.7	0.7	0.8	0.8	0.9	0.8	0.8	0.8	0.8
# 00955 - SILICA DISSOLVED (MG/L AS SIO2)	16.6	16.2	8.8	6.6	6.2	5.7	7.5	11.9	7.2	8.5	8.4	13.4
# 01000 - ARSENIC DISSOLVED (UG/L AS AS)	1.0	2.0	1.0	1.2	2.0	1.8	3.3	4.2	2.0	2.0	1.5	1.0
# 01001 - ARSENIC SUSPENDED TOTAL (UG/L AS AS)				1.0	0.0	1.0			0.3			
# 01002 - ARSENIC TOTAL (UG/L AS AS)	1.3		1.0	1.2	1.5	1.8	4.0		2.3	1.5	1.5	1.0
# 01005 - BARIUM DISSOLVED (UG/L AS BA)											20.0	30.0
# 01010 - BERYLLIUM DISSOLVED (UG/L AS BE)	10.0	10.0	10.0	7.4	7.5	10.0	8.4	10.0	8.0	15.0	10.0	10.0
# 01011 - BERYLLIUM SUSPENDED RECOVERABLE (UG/L AS BE)				10.0	0.0				0.0			
# 01012 - BERYLLIUM TOTAL (UG/L AS BE)	10.0		10.0	10.0	7.5	10.0	10.0		6.7	10.0	10.0	10.0
# 01015 - BISMUTH DISSOLVED (UG/L AS BI)											11.0	14.0
# 01020 - BORON DISSOLVED (UG/L AS B)	406.7	392.2	243.3	401.5	460.0	526.9	528.5	570.0	557.5	544.0	490.0	497.3
# 01025 - CADMIUM DISSOLVED (UG/L AS CD)	2.0	4.0	1.0	1.2	1.2	1.0	1.3	1.0	0.6	1.3	1.0	50.0
# 01026 - CADMIUM SUSPENDED (UG/L AS CD)				0.0	0.0				0.0			
# 01027 - CADMIUM TOTAL (UG/L AS CD)	20.0		1.0	7.5	0.8	4.2	20.0		0.3	13.7	20.0	20.0
# 01030 - CHROMIUM DISSOLVED (UG/L AS CR)	0.0	20.0	10.0	6.8	3.2	2.8	2.3	4.6	6.4	20.0	0.0	20.0
# 01031 - CHROMIUM SUSPENDED (UG/L AS CR)				0.0	0.0	0.0			5.0			
# 01034 - CHROMIUM TOTAL (UG/L AS CR)	0.0		30.0	6.8	3.2	2.8	20.0		13.3	45.0	7.5	20.0
# 01035 - COBALT DISSOLVED (UG/L AS CO)											10.0	14.0
# 01040 - COPPER DISSOLVED (UG/L AS CU)	2.0	3.0	3.0	1.2	1.2	1.4	2.2	2.8	1.2	2.0	1.0	20.0
# 01041 - COPPER SUSPENDED (UG/L AS CU)			4.0	2.0	5.0	2.0			2.3			
# 01042 - COPPER TOTAL (UG/L AS CU)	23.3		7.0	9.7	5.5	7.2	20.0		3.7	10.0	20.0	110.0
# 01044 - IRON SUSPENDED (UG/L AS FE)			650.0	450.0	1150.0	1200.0			483.3			
# 01045 - IRON, TOTAL, (UG/L AS FE)	1436.7		700.0	763.3	1227.5	1425.0	1300.0		510.0	500.0	325.0	620.0

Appendix D
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Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 01046 - IRON DISSOLVED (UG/L AS FE)	54.2	66.6	119.1	38.0	34.6	46.9	31.5	37.0	35.8	42.0	31.1	38.2
# 01049 - LEAD DISSOLVED (UG/L AS PB)	5.0	16.0	4.0	2.3	1.2	2.8	4.5	3.4	0.6	5.7	2.0	14.0
# 01050 - LEAD SUSPENDED (UG/L AS PB)			0.0	0.0	4.0	0.0			5.0			
# 01051 - LEAD TOTAL (UG/L AS PB)	200.0		4.0	70.7	3.2	36.3	200.0		3.7	134.0	200.0	200.0
# 01054 - MANGANESE SUSPENDED (UG/L AS MN)			30.0	70.0	100.0	120.0			46.7	30.0		
# 01055 - MANGANESE TOTAL (UG/L AS MN)	83.3		110.0	230.0	147.5	151.7	120.0		70.0	73.3	45.0	50.0
# 01056 - MANGANESE DISSOLVED (UG/L AS MN)	60.0	90.0	80.0	138.3	47.5	42.0	31.3	32.0	20.0	18.0	25.0	30.0
# 01060 - MOLYBDENUM DISSOLVED (UG/L AS MO)	4.0	4.0		4.0			5.0			3.5	4.5	6.0
# 01062 - MOLYBDENUM TOTAL (UG/L AS MO)	3.0			4.0		5.0	2.0			8.0	5.0	5.0
# 01065 - NICKEL DISSOLVED (UG/L AS NI)	3.0	0.0	2.0	4.2	4.2	4.8	3.5	4.4	2.8	5.0	3.5	14.0
# 01066 - NICKEL SUSPENDED (UG/L AS NI)			5.0	0.0	5.5	0.0			10.0			
# 01067 - NICKEL TOTAL (UG/L AS NI)	33.3		7.0	20.8	8.0	14.2	50.0		12.7	50.0	50.0	50.0
# 01075 - SILVER DISSOLVED (UG/L AS AG)											2.0	2.0
# 01080 - STRONTIUM DISSOLVED (UG/L AS SR)											1100.0	1800.0
# 01085 - VANADIUM DISSOLVED (UG/L AS V)	0.7	1.0		0.6			0.0			1.8	1.0	10.0
# 01090 - ZINC DISSOLVED (UG/L AS ZN)	20.0	20.0	10.0	15.5	12.5	10.0	12.2	10.0	16.0	10.0	20.0	110.0
# 01091 - ZINC SUSPENDED (UG/L AS ZN)				10.0	15.0	30.0			63.3			
# 01092 - ZINC TOTAL (UG/L AS ZN)	20.0		20.0	34.0	22.5	20.0	20.0		73.3	30.0	20.0	
# 01100 - TIN DISSOLVED (UG/L AS SN)											11.0	14.0
# 01105 - ALUMINUM, TOTAL (UG/L AS AL)	220.0			450.0		780.0	710.0			230.0	160.0	
# 01106 - ALUMINUM DISSOLVED (UG/L AS AL)	30.0	100.0		60.0			100.0			65.0	100.0	100.0
# 01120 - GALLIUM DISSOLVED (UG/L AS GA)											5.0	6.0
# 01125 - GERMANIUM DISSOLVED (UG/L AS GE)											20.0	14.0
# 01130 - LITHIUM DISSOLVED (UG/L AS LI)	150.0	140.0		100.0			140.0			125.0	130.0	150.0
# 01132 - LITHIUM TOTAL (UG/L AS LI)	100.0			100.0		120.0	140.0			130.0	145.0	140.0
# 01145 - SELENIUM DISSOLVED (UG/L AS SE)	1.0	1.0	1.0	1.0	0.8	1.0	1.0	1.0	1.0	1.0	1.5	
# 01146 - SELENIUM SUSPENDED (UG/L AS SE)				0.0	0.5	0.0			0.0			
# 01147 - SELENIUM TOTAL (UG/L AS SE)	1.3		1.0	1.3	1.2	1.0	1.0		1.0	1.0	1.5	2.0
# 01150 - TITANIUM DISSOLVED (UG/L AS TI)											8.0	10.0
# 01160 - ZIRCONIUM DISSOLVED (UG/L AS ZR)											20.0	22.0
# 03515 - GROSS BETA DISSOLVED (PCI/L AS CS-137)											42.0	25.0
# 03516 - GROSS BETA SUSPENDED (PCI/L AS CS-137)											3.9	4.7
# 09511 - RADIUM 226 DISSOLVED, RADON METHOD (PCI/L)											0.1	0.0
# 22703 - URANIUM, NATURAL, WATER, DISSOLVED, UG/L											12.0	10.0
# 70301 - SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	2115.7	2121.7	1189.9	2182.5	2077.9	2235.7	2220.0	2127.5	1992.5	2021.2	2130.0	2428.6
# 70302 - SOLIDS, DISSOLVED (TONS PER DAY)	32.6	31.6	106.2	52.4	175.8	48.8	12.7	14.1	7.4	7.8	18.5	29.2
# 70303 - SOLIDS, DISSOLVED (TONS PER ACRE-FOOT)	2.9	2.9	1.6	3.0	2.8	3.0	3.0	2.9	2.7	2.7	2.9	3.3
# 70331 - SEDIMENT, SUSPENDED, SIEVE DIAMETER, PERCENT FINER THAN .062 MM	77.2	86.0	90.2	87.2	94.3	87.2	90.5	90.1	91.5	82.6	76.0	75.8

Appendix D
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Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 70507 - PHOSPHORUS ORTHOPHOSPHATE, TOTAL (MG/L AS P)	0.0		0.0		0.0	0.0	0.0		0.0	0.0	0.0	0.0
# 71845 - NITROGEN, AMMONIA, TOTAL (MG/L AS NH4)	0.1	0.0	0.0	0.2	0.0	0.1	0.0		0.0	0.0	0.0	0.0
# 71865 - IODIDE, DISSOLVED (MG/L AS I)		0.0		0.0					0.0	0.0		
# 71870 - BROMIDE, DISSOLVED (MG/L AS BR)		0.1		0.1					0.0	0.1		
# 71886 - PHOSPHORUS TOTAL (MG/L AS PO4)	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.1	0.1	0.2	0.1
# 71887 - NITROGEN, TOTAL (MG/L AS NO3)	7.4	6.0	9.8	3.8	6.1	7.3	5.6	6.0	5.0	3.7	4.6	4.2
# 71890 - MERCURY, DISSOLVED (UG/L AS HG)	0.5	0.1	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.3	0.5	0.1
# 71895 - MERCURY, SUSPENDED HG)RECOVERABLE (UG/L AS HG)			0.1	0.0	0.0				0.0			
# 71900 - MERCURY, TOTAL RECOVERABLE (UG/L AS HG)	0.5		0.2	0.2	0.2	0.3	0.5		0.2	0.6	0.5	0.1
# 80010 - URANIUM, DISSOLVED, DIRECT FLUOROMETRIC (PCI/L)											10.0	
# 80030 - ALPHA, GROSS, DISSOLVED AS U NATURAL (UG/L)											34.5	30.0
# 80040 - GROSS ALPHA RADIOACTIVITY, SUSPENDED TOTAL (UG/L AS U NATURAL)											0.4	0.5
# 80050 - BETA, GROSS, DISSOLVED AS STRONTIUM/YTTRIUM-90 (PCI/L)											33.5	22.0
# 80060 - GROSS BETA RADIOACTIVITY, SUSPENDED TOTAL (PCI/L AS SR/Y-90)											3.6	3.8
# 80154 - SEDIMENT, SUSPENDED CONCENTRATION (MG/L)	70.6	58.2	146.1	65.6	144.9	142.8	134.3	149.9	62.0	51.6	56.1	61.3
# 80155 - SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)	2.3	0.8	84.3	1.2	48.7	2.4	0.6	0.5	0.2	0.1	0.6	0.6
# 82068 - POTASSIUM 40 DISSOLVED(PCI /L AS K40)	13.0	12.0		13.0	2.6	1.0	16.0			17.0	14.0	
# 82398 - SAMPLING METHOD (CODES)	15.0	10.0	10.0	10.0	20.0	18.0	30.0	16.7	40.0	40.0	40.0	20.0
# 90095 - SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C	2757.1	2495.0	2243.3	2777.1	3006.7	3137.0	2747.5	2797.1	2663.3	2524.4	2603.3	3017.5
# 90410 - ACID NEUTRALIZING CAPACITY (ANC), WATER, CACO3	556.9	469.5	420.7	432.0	532.3	555.0	529.1	561.0	542.2	547.9	524.0	580.2
# 95902 - HARDNESS, NONCARBONATE, AS CACO3, MG/L	300.0		200.0	350.0	445.0	390.0	335.0	380.0	225.0	190.0		240.0

Appendix D
Table 13
Monthly Averages of Water-Quality Parameters for Hanging Woman Creek, near Birney, MT.
From USGS Discrete, Non-Continuous Samples, taken from USGS, throughout the Period of 1974-1995

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00010 - TEMPERATURE, WATER (DEG. C)	0.1	0.3	3.1	9.7	15.6	20.1	22.3	20.4	14.5	10.8	2.9	0.1
# 00020 - TEMPERATURE, AIR, DEGREES CELSIUS	0.0	4.0	9.4	12.4	17.7	22.3	25.4	24.0	16.8	16.1	5.1	-2.4
# 00025 - BAROMETRIC PRESSURE (MM OF HG)	676.5	683.0	676.1	680.0	679.8	680.8	681.2	681.3	684.0	679.0	680.8	679.2
# 00032 - CLOUD COVER (PERCENT)	68.3	33.8	59.3	45.7	37.5	40.0	16.7	33.3	100.0		42.9	100.0
# 00035 - WIND SPEED (MPH)	0.0	1.3	0.7	3.8	1.2	2.4	3.3	3.7	5.0		2.0	0.0
# 00061 - DISCHARGE, INSTANTANEOUS, CUBIC FEET PER SECOND	6.4	92.5	40.6	2.7	21.2	2.8	1.5	0.6	0.8	0.8	0.8	1.0
# 00065 - GAGE HEIGHT, FEET	2.3	3.9	3.6		2.4	2.6	2.4	2.4	2.2	2.2	2.3	2.4
# 00070 - TURBIDITY (JACKSON CANDLE UNITS)	17.5	13.5	142.8	13.2	79.0	62.8	106.7	38.3	25.5	9.3	13.3	5.5
# 00095 - SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C)	2567.1	1986.2	1669.7	2855.3	2891.6	2760.5	2853.6	2383.6	2630.9	2170.0	2526.6	2836.0
# 00300 - OXYGEN DISSOLVED (MG/L)	11.5	10.9	11.1	10.4	8.3	7.5	6.2	6.7	8.1	8.9	11.0	11.7
# 00301 - OXYGEN DISSOLVED (% OF SATURATION)	85.7	82.0	97.7	103.3	87.1	84.3	72.4	85.2	90.6	87.3	91.2	91.0
# 00310 - BIOCHEMICAL OXYGEN DEMAND, 5-DAY AT 20 DEGREES CELSIUS (MG/L)	3.4	4.6	4.5	1.8	2.1	1.8	2.2	1.4	2.1	1.4	1.1	0.8
# 00400 - PH, WATER, WHOLE, FIELD, STANDARD UNITS	8.1	8.1	8.1	8.3	8.3	8.2	8.2	8.4	8.3	8.4	8.3	8.1
# 00403 - PH, WATER, WHOLE, LABORATORY, STANDARD UNITS	8.1	7.9	8.0	8.2	8.1	8.2	8.2	8.3	8.4	8.5	8.2	8.1
# 00405 - CARBON DIOXIDE DISSOLVED (MG/L AS CO2)	6.4	7.8	5.7	7.9	4.9	6.8	8.0	6.7	5.8	4.9	6.4	9.0
# 00410 - ACID NEUTRALIZING CAPACITY (ANC), CACO3	473.0	437.6	305.8	481.6	452.3	469.0	489.9	472.3	483.4	481.7	516.8	512.1
# 00440 - ACID NEUTRALIZING CAPACITY (ANC), HCO3	512.0	500.0	328.4	583.2	481.2	539.5	589.3	607.3	592.8	601.5	617.3	596.8
# 00445 - ACID NEUTRALIZING CAPACITY (ANC), CARBONATE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
# 00452 - CARBONATE, WATER, DISSOLVED, FIELD, MG/L AS CO3											0.0	
# 00600 - NITROGEN TOTAL (MG/L AS N)	1.0	0.9	1.6	0.7	1.0	1.3	0.7	0.8	0.5	0.6	0.5	0.5
# 00605 - NITROGEN ORGANIC TOTAL (MG/L AS N)	0.7	0.7	1.2	0.5	0.9	1.2	0.6	0.7	0.6	0.6	0.4	0.4
# 00608 - NITROGEN AMMONIA DISSOLVED (MG/L AS N)	0.0		0.1		0.0	0.0	0.0			0.0	0.0	
# 00610 - NITROGEN AMMONIA TOTAL (MG/L AS N)	0.1	0.1	0.2	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.1
# 00613 - NITROGEN, NITRITE, DISSOLVED, MG/L AS N	0.0		0.0		0.0	0.0	0.0			0.0	0.0	
# 00615 - NITROGEN, NITRITE, TOTAL, MG/L AS N		0.0	0.0		0.0	0.0					0.0	0.0
# 00618 - NITROGEN NITRATE DISSOLVED (MG/L AS N)	0.0					0.0	0.0			3.0		
# 00625 - NITROGEN AMMONIA PLUS ORGANIC TOTAL (MG/L AS N)	0.7	0.9	1.2	0.7	0.8	0.9	0.7	0.9	0.6	0.6	0.5	0.5
# 00630 - NITROGEN NITRITE PLUS NITRATE TOTAL (MG/L AS N)	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1
# 00631 - NITROGEN NITRITE PLUS NITRATE DISSOLVED (MG/L AS N)	0.0		0.0		0.0	0.0	0.1			1.5	0.0	
# 00650 - PHOSPHATE TOTAL (MG/L AS PO4)				0.1	0.1	0.1						
# 00665 - PHOSPHORUS TOTAL (MG/L AS P)	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
# 00666 - PHOSPHORUS DISSOLVED (MG/L AS P)				0.0								
# 00671 - PHOSPHORUS ORTHOPHOSPHATE DISSOLVED (MG/L AS P)	0.0		0.0		0.0	0.0	0.0			0.0	0.0	

Appendix D
Table 13
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Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00680 - CARBON ORGANIC TOTAL (MG/L AS C)									20.0			
# 00681 - CARBON ORGANIC DISSOLVED (MG/L AS C)	5.1	13.0	9.5	9.1	7.7	7.6	10.5	11.0	11.5	9.8	6.6	5.4
# 00689 - CARBON, ORGANIC, PARTICULATE, TOTAL, MILLIGRAMS PER LITER AS C	0.4		0.5	0.4	0.8	0.2	1.0	1.0	0.6	0.6	0.4	0.1
# 00900 - HARDNESS TOTAL (MG/L AS CA03)	708.6	662.0	580.0	836.2	824.4	861.4	783.3	630.0	734.3	672.9	740.0	818.3
# 00902 - NONCARBONATE HARDNESS WATER WHOLE TOTAL, FIELD, (MG/L AS CACO3)	244.6	222.0	258.7	384.3	382.2	397.1	295.0	171.8	251.3	205.9	234.0	305.0
# 00915 - CALCIUM DISSOLVED (MG/L AS CA)	122.2	88.7	80.9	102.7	114.1	102.3	99.5	78.6	87.2	85.6	99.3	116.6
# 00925 - MAGNESIUM DISSOLVED (MG/L AS MG)	122.6	101.6	92.1	139.0	135.9	132.6	140.9	105.5	120.2	108.5	125.1	128.5
# 00930 - SODIUM DISSOLVED (MG/L AS NA)	320.2	278.8	248.6	378.7	384.7	386.2	387.3	301.2	332.5	286.2	325.0	346.0
# 00931 - SODIUM ADSORPTION RATIO	4.6	4.7	4.1	5.5	5.3	6.0	5.4	5.2	5.2	4.8	4.8	5.4
# 00932 - SODIUM, PERCENT	45.9	47.0	43.3	48.4	46.9	49.7	48.8	49.0	48.0	46.9	45.8	48.0
# 00933 - SODIUM PLUS POTASSIUM DISSOLVED (MG/L AS NA)	450.0		350.0	400.0	520.0	580.0	420.0		430.0	400.0		430.0
# 00935 - POTASSIUM DISSOLVED (MG/L AS K)	12.8	12.2	12.3	14.4	15.7	14.9	16.5	15.2	14.9	13.4	13.5	15.0
# 00940 - CHLORIDE DISSOLVED (MG/L AS CL)	16.2	11.7	11.7	13.9	15.1	15.4	26.0	12.2	13.0	10.0	12.4	12.8
# 00945 - SULFATE DISSOLVED (MG/L AS SO4)	930.0	856.4	754.5	1158.0	1163.3	1135.6	1166.4	797.5	926.2	752.5	905.7	975.5
# 00950 - FLUORIDE DISSOLVED (MG/L AS F)	1.0	0.7	0.7	0.9	1.0	0.9	1.1	1.1	1.2	1.2	1.1	1.2
# 00955 - SILICA DISSOLVED (MG/L AS SIO2)	19.0	14.7	11.9	12.7	10.7	10.6	11.0	11.2	13.5	14.5	17.9	19.7
# 01000 - ARSENIC DISSOLVED (UG/L AS AS)	1.0	1.5	1.0	1.0	1.3	1.4	1.8	2.0	2.0	1.0	1.0	1.0
# 01001 - ARSENIC SUSPENDED TOTAL (UG/L AS AS)				1.0	0.0				0.0			
# 01002 - ARSENIC TOTAL (UG/L AS AS)	2.0	4.0	1.0	1.2	1.3	2.0	3.0		1.3	1.5	1.5	2.0
# 01005 - BARIUM DISSOLVED (UG/L AS BA)											40.0	31.0
# 01010 - BERYLLIUM DISSOLVED (UG/L AS BE)	10.0	5.2	5.2	7.5	8.3	8.6	10.0	5.5	7.8	10.0	10.0	10.0
# 01011 - BERYLLIUM SUSPENDED RECOVERABLE (UG/L AS BE)				5.0	0.0				0.0			
# 01012 - BERYLLIUM TOTAL (UG/L AS BE)	10.0	10.0	10.0	10.0	8.3	10.0	10.0		6.7	10.0	10.0	10.0
# 01015 - BISMUTH DISSOLVED (UG/L AS BI)											20.0	11.0
# 01020 - BORON DISSOLVED (UG/L AS B)	291.7	221.1	200.6	275.3	283.3	303.1	310.0	282.5	318.8	360.0	292.9	292.7
# 01025 - CADMIUM DISSOLVED (UG/L AS CD)	0.0	1.5	1.2	1.0	1.0	1.1	1.2	1.0	0.5	1.0	1.0	35.0
# 01026 - CADMIUM SUSPENDED (UG/L AS CD)				0.0	0.0				0.5			
# 01027 - CADMIUM TOTAL (UG/L AS CD)	20.0	1.0	1.0	10.0	1.0	7.3	20.0		1.0	20.0	20.0	20.0
# 01030 - CHROMIUM DISSOLVED (UG/L AS CR)	0.0	15.0	6.5	7.5	2.3	3.4	2.8	15.0	10.0	20.0	3.0	20.0
# 01031 - CHROMIUM SUSPENDED (UG/L AS CR)				5.0	0.0				10.0			
# 01034 - CHROMIUM TOTAL (UG/L AS CR)	6.7	20.0	20.7	7.5	2.7	7.0	0.0		13.3	10.0	7.0	0.0
# 01035 - COBALT DISSOLVED (UG/L AS CO)											20.0	10.0

Appendix D
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# 01040 - COPPER DISSOLVED (UG/L AS CU)	0.0	2.5	2.8	0.8	1.3	1.9	1.6	3.0	1.8	2.0	2.0	3.0
# 01041 - COPPER SUSPENDED (UG/L AS CU)			3.0	4.5	5.5				1.7			
# 01042 - COPPER TOTAL (UG/L AS CU)	20.0	21.0	7.3	12.8	4.3	9.2	20.0		3.3	10.0	20.0	20.0
# 01044 - IRON SUSPENDED (UG/L AS FE)			330.0	550.0	945.0				635.0			
# 01045 - IRON, TOTAL, (UG/L AS FE)	1533.3	13000.0	2453.3	785.0	796.7	1598.3	1100.0		596.7	725.0	505.0	540.0
# 01046 - IRON DISSOLVED (UG/L AS FE)	55.0	107.8	171.1	42.0	32.0	32.4	39.1	47.2	31.2	85.5	24.4	35.0
# 01049 - LEAD DISSOLVED (UG/L AS PB)	2.0	3.0	1.2	2.8	1.0	3.1	3.4	1.5	2.0	6.5	2.5	10.0
# 01050 - LEAD SUSPENDED (UG/L AS PB)			0.0	1.0	3.5				8.5			
# 01051 - LEAD TOTAL (UG/L AS PB)	200.0	11.0	2.0	134.0	2.5	69.7	200.0		6.7	200.0	200.0	200.0
# 01054 - MANGANESE SUSPENDED (UG/L AS MN)			30.0	35.0	95.0				40.0			
# 01055 - MANGANESE TOTAL (UG/L AS MN)	86.7	470.0	193.3	167.5	128.3	158.3	130.0		56.7	40.0	40.0	80.0
# 01056 - MANGANESE DISSOLVED (UG/L AS MN)	60.0	80.5	120.0	110.0	50.0	45.4	46.0	65.0	17.8	20.0	20.0	30.0
# 01060 - MOLYBDENUM DISSOLVED (UG/L AS MO)	3.0	4.0		4.0		2.0	3.0			4.0	4.0	4.0
# 01062 - MOLYBDENUM TOTAL (UG/L AS MO)	1.7			4.0		3.0	2.0			3.5	3.0	3.0
# 01065 - NICKEL DISSOLVED (UG/L AS NI)	6.0	3.5	3.2	2.8	2.5	2.4	2.8	7.0	2.2	3.0	2.5	8.0
# 01066 - NICKEL SUSPENDED (UG/L AS NI)				6.0	3.5				5.7			
# 01067 - NICKEL TOTAL (UG/L AS NI)	33.3	14.0	7.7	28.8	4.0	21.5	50.0		7.7	25.0	50.0	50.0
# 01075 - SILVER DISSOLVED (UG/L AS AG)											2.0	2.0
# 01080 - STRONTIUM DISSOLVED (UG/L AS SR)											1300.0	1400.0
# 01085 - VANADIUM DISSOLVED (UG/L AS V)	0.4	0.0		0.6		0.0	0.0			1.1	0.9	5.0
# 01090 - ZINC DISSOLVED (UG/L AS ZN)	20.0	13.0	7.8	22.5	11.7	10.7	14.0	16.0	16.2	20.0	20.0	20.0
# 01091 - ZINC SUSPENDED (UG/L AS ZN)				30.0	15.0				10.0			
# 01092 - ZINC TOTAL (UG/L AS ZN)	30.0	100.0	23.3	56.7	20.0	18.3	20.0		23.3	20.0	20.0	
# 01100 - TIN DISSOLVED (UG/L AS SN)											20.0	10.0
# 01105 - ALUMINUM, TOTAL (UG/L AS AL)	150.0			260.0		1370.0	560.0			200.0	135.0	
# 01106 - ALUMINUM DISSOLVED (UG/L AS AL)	100.0	100.0		65.0		20.0	100.0			70.0	100.0	40.0
# 01120 - GALLIUM DISSOLVED (UG/L AS GA)											10.0	5.0
# 01125 - GERMANIUM DISSOLVED (UG/L AS GE)											20.0	10.0
# 01130 - LITHIUM DISSOLVED (UG/L AS LI)	100.0	110.0		105.0		50.0	120.0			95.0	90.0	100.0
# 01132 - LITHIUM TOTAL (UG/L AS LI)	73.3			95.0		75.0	120.0			95.0	100.0	80.0
# 01145 - SELENIUM DISSOLVED (UG/L AS SE)	1.0	1.0	1.0	0.8	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
# 01146 - SELENIUM SUSPENDED (UG/L AS SE)				0.0	0.0				0.0			
# 01147 - SELENIUM TOTAL (UG/L AS SE)	1.3	1.0	1.0	0.8	1.0	1.0	1.0		1.0	1.0	1.0	1.0
# 01150 - TITANIUM DISSOLVED (UG/L AS TI)											20.0	8.0

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# 01160 - ZIRCONIUM DISSOLVED (UG/L AS ZR)											20.0	25.0
# 70300 - SOLIDS, RESIDUE ON EVAPORATION AT 180 DEG C, DISSOLVED (MG/L)				2190.0								
# 70301 - SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	1679.1	1591.2	1375.0	2118.8	1971.1	2221.4	1960.0	1539.0	1798.6	1568.6	1728.0	1966.7
# 70302 - SOLIDS, DISSOLVED (TONS PER DAY)	21.0	14.5	32.1	21.6	130.8	28.6	12.9	4.7	4.6	4.5	6.5	9.5
# 70303 - SOLIDS, DISSOLVED (TONS PER ACRE-FOOT)	2.3	2.2	1.9	2.9	2.7	3.0	2.7	2.1	2.4	2.1	2.3	2.7
# 70331 - SEDIMENT, SUSPENDED, SIEVE DIAMETER, PERCENT FINER THAN .062 MM	60.2	71.2	83.2	64.4	90.3	82.2	83.1	95.2	81.7	69.0	70.2	51.0
# 70507 - PHOSPHORUS ORTHOPHOSPHATE, TOTAL (MG/L AS P)		0.0	0.0		0.0	0.0					0.0	0.0
# 71845 - NITROGEN, AMMONIA, TOTAL (MG/L AS NH4)	0.0	0.0	0.1	0.0	0.0	0.0	0.0		0.0	0.0	0.1	0.0
# 71865 - IODIDE, DISSOLVED (MG/L AS I)			0.0	0.0			0.0		0.0	0.0	0.0	
# 71870 - BROMIDE, DISSOLVED (MG/L AS BR)			0.1	0.1			0.1		0.0	0.0	0.9	
# 71886 - PHOSPHORUS TOTAL (MG/L AS PO4)	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
# 71887 - NITROGEN, TOTAL (MG/L AS NO3)	4.6	3.9	7.0	3.1	4.2	5.8	3.0	3.5	2.4	2.8	2.4	2.4
# 71890 - MERCURY, DISSOLVED (UG/L AS HG)	0.5	0.1	0.2	0.2	0.2	0.2	0.2	0.4	0.1	0.3	0.5	0.1
# 71895 - MERCURY, SUSPENDED HG)RECOVERABLE (UG/L AS HG)				0.0	0.0				0.1			
# 71900 - MERCURY, TOTAL RECOVERABLE (UG/L AS HG)	0.5	0.1	0.1	0.3	0.1	0.3	0.5		0.2	0.5	0.5	0.1
# 80154 - SEDIMENT, SUSPENDED CONCENTRATION (MG/L)	65.5	103.7	107.9	65.7	118.5	123.7	151.5	106.5	72.1	52.5	52.1	58.2
# 80155 - SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)	2.4	0.3	21.2	0.4	61.6	1.9	2.2	0.4	0.2	0.1	0.1	0.2
# 82068 - POTASSIUM 40 DISSOLVED(PCI /L AS K40)	9.7	9.7		9.7	12.0	0.7				10.0	0.3	
# 90095 - SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C	2652.9	2238.8	2016.7	2756.7	2888.8	2628.0	2931.7	2048.0	2165.0	1906.7	2443.0	2494.0
# 90410 - ACID NEUTRALIZING CAPACITY (ANC), CACO3	573.9	358.8	378.2	470.4	468.9	449.6	499.0	424.8	478.5	492.3	529.0	577.0
# 95902 - HARDNESS, NONCARBONATE, AS CACO3, MG/L	140.0		96.0	155.0	295.0	210.0	120.0	31.0	63.0	0.0		230.0

Appendix D
Table 14
Monthly Averages of Water-Quality for Prairie Dog Creek, near Birney, MT.
From USGS Discrete, Non-Continuous Samples, taken at USGS Gauge 6307528, throughout the Period 1978-1983

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00010 - TEMPERATURE, WATER (DEG. C)		0.8		13.0	16.8	19.4	21.9	16.0	13.5			0.0
# 00020 - TEMPERATURE, AIR, DEGREES CELSIUS		9.8		17.5	6.0	23.2	27.5	21.5				2.5
# 00025 - BAROMETRIC PRESSURE (MM OF HG)						670.0						
# 00032 - CLOUD COVER (PERCENT)						50.0						
# 00035 - WIND SPEED (MPH)						5.0						
# 00061 - DISCHARGE, INSTANTANEOUS, CUBIC FEET PER SECOND		2.2		1.6	4.7	0.8	0.4	0.2	0.1			0.1
# 00070 - TURBIDITY (JACKSON CANDLE UNITS)									25.0			
# 00095 - SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C)		297.0		1220.0	1320.0	995.0	1600.0	1720.0	1120.0			1860.0
# 00300 - OXYGEN DISSOLVED (MG/L)		10.7		5.5	12.0	5.8	4.4	8.4				3.7
# 00301 - OXYGEN DISSOLVED (% OF SATURATION)		89.0		59.0	122.0	73.0	62.0	95.5				28.0
# 00310 - BIOCHEMICAL OXYGEN DEMAND, 5-DAY AT 20 DEGREES CELSIUS (MG/L)				0.6			0.6		1.7			
# 00400 - PH, WATER, WHOLE, FIELD, STANDARD UNITS		8.2		8.2	8.7	8.3	9.2	8.6	8.3			8.0
# 00403 - PH, WATER, WHOLE, LABORATORY, STANDARD UNITS						7.4						
# 00405 - CARBON DIOXIDE DISSOLVED (MG/L AS CO2)									2.9			
# 00410 - ACID NEUTRALIZING CAPACITY (ANC),CACO3		80.5		365.0		350.0	350.0	410.0	300.0			380.0
# 00440 - ACID NEUTRALIZING CAPACITY (ANC), HCO3									360.0			
# 00445 - ACID NEUTRALIZING CAPACITY (ANC), WATER CARBONATE									0.0			
# 00600 - NITROGEN TOTAL (MG/L AS N)		2.1		0.7	0.5	0.4	0.5	0.3	0.6			0.6
# 00605 - NITROGEN ORGANIC TOTAL (MG/L AS N)		1.9		0.5	0.4	0.3	0.5	0.3	0.6			0.3
# 00610 - NITROGEN AMMONIA TOTAL (MG/L AS N)		0.0		0.0	0.0	0.2	0.0	0.0	0.0			0.0
# 00625 - NITROGEN AMMONIA PLUS ORGANIC TOTAL (MG/L AS N)		1.9		0.5	0.4	2.8	0.5	0.3	0.6			0.3
# 00630 - NITROGEN NITRITE PLUS NITRATE TOTAL (MG/L AS N)		0.2		0.1	0.1	0.7	0.0	0.1	0.0			0.3
# 00650 - PHOSPHATE TOTAL (MG/L AS PO4)				0.1		0.1	0.1					
# 00665 - PHOSPHORUS TOTAL (MG/L AS P)		0.2		0.0	0.0	0.3	0.0	0.0	0.0			0.0
# 00680 - CARBON ORGANIC TOTAL (MG/L AS C)												5.5
# 00681 - CARBON ORGANIC DISSOLVED (MG/L AS C)		51.0		6.7		7.8	8.3					5.3
# 00689 - CARBON, ORGANIC, PARTICULATE, TOTAL, MILLIGRAMS PER LITER		2.8				0.5	0.7					0.0
# 00900 - HARDNESS TOTAL (MG/L AS CA03)		170.0		660.0	750.0	730.0	760.0	820.0	550.0			940.0
# 00902 - NONCARBONATE HARDNESS WATER WHOLE TOTAL, FIELD, (MG/L AS CACO3)		72.0		295.0		380.0	410.0	410.0	260.0			560.0
# 00915 - CALCIUM DISSOLVED (MG/L AS CA)		26.0		77.5	85.0	67.0	42.0	50.0	69.0			78.0
# 00925 - MAGNESIUM DISSOLVED (MG/L AS MG)		26.0		112.5	130.0	80.0	160.0	170.0	92.0			180.0
# 00930 - SODIUM DISSOLVED (MG/L AS NA)		12.0		57.5	65.0	47.0	100.0	120.0	59.0			110.0

Appendix D
Table 14
Monthly Averages of Water-Quality for Prairie Dog Creek, near Birney, MT.
From USGS Discrete, Non-Continuous Samples, taken at USGS Gauge 6307528, throughout the Period 1978-1983

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00931 - SODIUM ADSORPTION RATIO		0.4		1.0	1.0	1.2	1.6	1.8	1.1			1.6
# 00932 - SODIUM, PERCENT		12.0		16.0	16.0	18.0	22.0	24.0	19.0			20.0
# 00933 - SODIUM PLUS POTASSIUM DISSOLVED (MG/L AS NA)		23.0			71.0	81.0	110.0	130.0				
# 00935 - POTASSIUM DISSOLVED (MG/L AS K)		11.0		5.9	5.5	8.4	9.3	9.1	10.0			9.0
# 00940 - CHLORIDE DISSOLVED (MG/L AS CL)		4.0		5.3	5.4	5.0	7.5	9.0	6.4			8.4
# 00945 - SULFATE DISSOLVED (MG/L AS SO4)		100.0		390.0	460.0	370.0	640.0	730.0	370.0			750.0
# 00950 - FLUORIDE DISSOLVED (MG/L AS F)		0.1		0.4	0.3	0.4	0.5	0.5	0.3			0.3
# 00955 - SILICA DISSOLVED (MG/L AS SIO2)		9.4		7.4	6.8	5.2	1.9	4.5	8.9			14.0
# 01000 - ARSENIC DISSOLVED (UG/L AS AS)							2.0		1.0			
# 01002 - ARSENIC TOTAL (UG/L AS AS)							1.0					
# 01010 - BERYLLIUM DISSOLVED (UG/L AS BE)							1.0		10.0			
# 01011 - BERYLLIUM SUSPENDED RECOVERABLE (UG/L AS BE)							0.0					
# 01012 - BERYLLIUM TOTAL (UG/L AS BE)							10.0					
# 01020 - BORON DISSOLVED (UG/L AS B)		190.0		90.0	90.0	85.0	190.0	150.0	90.0			140.0
# 01025 - CADMIUM DISSOLVED (UG/L AS CD)							3.0		0.0			
# 01026 - CADMIUM SUSPENDED (UG/L AS CD)							0.0					
# 01027 - CADMIUM TOTAL (UG/L AS CD)							0.0					
# 01030 - CHROMIUM DISSOLVED (UG/L AS CR)							0.0		0.0			
# 01031 - CHROMIUM SUSPENDED (UG/L AS CR)							10.0					
# 01034 - CHROMIUM TOTAL (UG/L AS CR)							20.0					
# 01040 - COPPER DISSOLVED (UG/L AS CU)							2.0		3.0			
# 01041 - COPPER SUSPENDED (UG/L AS CU)							2.0					
# 01042 - COPPER TOTAL (UG/L AS CU)							3.0					
# 01044 - IRON SUSPENDED (UG/L AS FE)							40.0					
# 01045 - IRON, TOTAL, (UG/L AS FE)							50.0					
# 01046 - IRON DISSOLVED (UG/L AS FE)		160.0		495.0	10.0	16.5	10.0	10.0	30.0			10.0
# 01049 - LEAD DISSOLVED (UG/L AS PB)							0.0		0.0			
# 01050 - LEAD SUSPENDED (UG/L AS PB)							17.0					
# 01051 - LEAD TOTAL (UG/L AS PB)							17.0					
# 01054 - MANGANESE SUSPENDED (UG/L AS MN)							6.0					
# 01055 - MANGANESE TOTAL (UG/L AS MN)							10.0					
# 01056 - MANGANESE DISSOLVED (UG/L AS MN)							4.0		20.0			
# 01060 - MOLYBDENUM DISSOLVED (UG/L AS MO)									2.0			
# 01065 - NICKEL DISSOLVED (UG/L AS NI)							2.0		0.0			

Appendix D
Table 14
Monthly Averages of Water-Quality for Prairie Dog Creek, near Birney, MT.
From USGS Discrete, Non-Continuous Samples, taken at USGS Gauge 6307528, throughout the Period 1978-1983

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 01066 - NICKEL SUSPENDED (UG/L AS NI)							6.0					
# 01067 - NICKEL TOTAL (UG/L AS NI)							8.0					
# 01085 - VANADIUM DISSOLVED (UG/L AS V)									0.4			
# 01090 - ZINC DISSOLVED (UG/L AS ZN)							6.0		20.0			
# 01091 - ZINC SUSPENDED (UG/L AS ZN)							4.0					
# 01092 - ZINC TOTAL (UG/L AS ZN)							20.0					
# 01106 - ALUMINUM DISSOLVED (UG/L AS AL)									10.0			
# 01130 - LITHIUM DISSOLVED (UG/L AS LI)									70.0			
# 01145 - SELENIUM DISSOLVED (UG/L AS SE)							2.0		1.0			
# 01146 - SELENIUM SUSPENDED (UG/L AS SE)							0.0					
# 01147 - SELENIUM TOTAL (UG/L AS SE)							2.0					
# 70301 - SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)		249.0		876.5		1020.0	1170.0	1340.0	793.0			1380.0
# 70302 - SOLIDS, DISSOLVED (TONS PER DAY)		1.1		4.0		3.0	1.2	0.4	1.1			0.3
# 70303 - SOLIDS, DISSOLVED (TONS PER ACRE-FOOT)		0.3		1.2		1.4	1.6	1.8	1.1			1.9
# 70331 - SEDIMENT, SUSPENDED, SIEVE DIAMETER, PERCENT FINER THAN .062 MM		96.8			100.0	98.0						
# 71845 - NITROGEN, AMMONIA, TOTAL (MG/L AS NH4)		0.0		0.0	0.0	0.0	0.0	0.0				
# 71865 - IODIDE, DISSOLVED (MG/L AS I)		0.0				0.0	0.0					
# 71870 - BROMIDE, DISSOLVED (MG/L AS BR)		0.1				0.0	0.1					
# 71886 - PHOSPHORUS TOTAL (MG/L AS PO4)		0.8		0.1	0.0	0.8	0.1	0.1				
# 71887 - NITROGEN, TOTAL (MG/L AS NO3)		9.4		3.0	2.3	1.7	2.2	1.3	2.7			2.5
# 71890 - MERCURY, DISSOLVED (UG/L AS HG)							0.1		0.2			
# 71895 - MERCURY, SUSPENDED HG)RECOVERABLE (UG/L AS HG)							0.0					
# 71900 - MERCURY, TOTAL RECOVERABLE (UG/L AS HG)							0.1					
# 80154 - SEDIMENT, SUSPENDED CONCENTRATION (MG/L)		175.5		173.0	287.0	94.7	29.8	85.3	31.3			82.0
# 80155 - SEDIMENT DISCHARGE, SUSPENDED (TONS/DAY)		0.2		0.9	10.1	0.1	0.0	0.0	0.0			0.0
# 90095 - SPECIFIC CONDUCTANCE MICROSIEMENS/CM AT 25 DEG C						612.0						
# 90410 - ACID NEUTRALIZING CAPACITY (ANC), CACO3						65.0						

Appendix D
Table 15
Monthly Averages of Water-Quality Parameters for Rosebud Creek near Kirby, MT.
From USGS Discrete, Non-Continuous Samples taken at USGS Gage 6295100, throughout the Period 1982-1988

Parameter	January	Febuary	March	April	May	June	July	August	September	October	November	December
# 00010 - TEMPERATURE, WATER (DEG. C)		0.0	2.3	11.7	10.5	14.3						0.0
# 00020 - TEMPERATURE, AIR, DEGREES CELSIUS		6.0	9.0	21.7	15.7	18.3						3.0
# 00061 - DISCHARGE, INSTANTANEOUS, CUBIC FEET PER SECOND		2.5	6.5	6.2	4.6	0.3						0.1
# 00095 - SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG. C)		955.0	993.7	1032.7	1106.7	1146.7						1340.0

Appendix E
Air Quality Data
Northern Cheyenne Reservation

Table E-1. Ambient Particulate Matter (PM-10)
Northern Cheyenne Reservation
Summary of Quarterly Monitoring Reports

PM-10 Lame Deer, MT		Values reported in micrograms per cubic meter			
		STP (mean)	**Range**	**LTP (mean)**	**Range**
1999	1st Quarter	10	9-12	10	8-10
	2nd Quarter	23	7-43	22	7-41
	3rd Quarter	24	9-36	21.6	8-35
	4th Quarter	16.9	4-39	17.7	5-41
2000	1st Quarter	22.9	9-55	22.1	9-53
	2nd Quarter	13	6-23	11.9	5-21
	3rd Quarter	21.6	7-40	19.1	7-19
	4th Quarter	12.1	7-27	11.8	7-27
PM-10 Exceedance		**150**			

STP values are adjusted to barometric pressure at sealevel;
LTP values represent barometric pressure at the monitoring site.

Table E-2. TEOM Daily Average Concentrations (PM-10)
Northern Cheyenne Reservation
Summary of Quarterly Monitoring Reports

TEOM PM-10 data Lame Deer, MT		Values reported in micrograms per cubic meter			
		STP (mean)	**Range**	**LTP (mean)**	**Range**
1999	1st Quarter	32.3	3.9-100.2	30.7	3.7-92.4
	2nd Quarter	29.3	1.7-106.5	26.8	1.6-99.1
	3rd Quarter	30.4	4.5-92	26.7	4.2-80.6
	4th Quarter	35.3	6.4-111.5	33.3	6.1-107.5
2000	1st Quarter	32.7	5.1-131.3	31.2	4.9-124.2
	2nd Quarter	23.5	5.6-78.4	21.5	5.2-72.3
	3rd Quarter	35.6	4.5-81.9	31.7	4.1-71.8
	4th Quarter	21.1	6.9-55.3	21.3	6.8-54.6
PM-10 Exceedance		**150**			

STP values are adjusted to barometric pressure at sealevel;
LTP values represent barometric pressure at the monitoring site.

Appendix E
Air Quality Data
Northern Cheyenne Reservation

Figure E-1

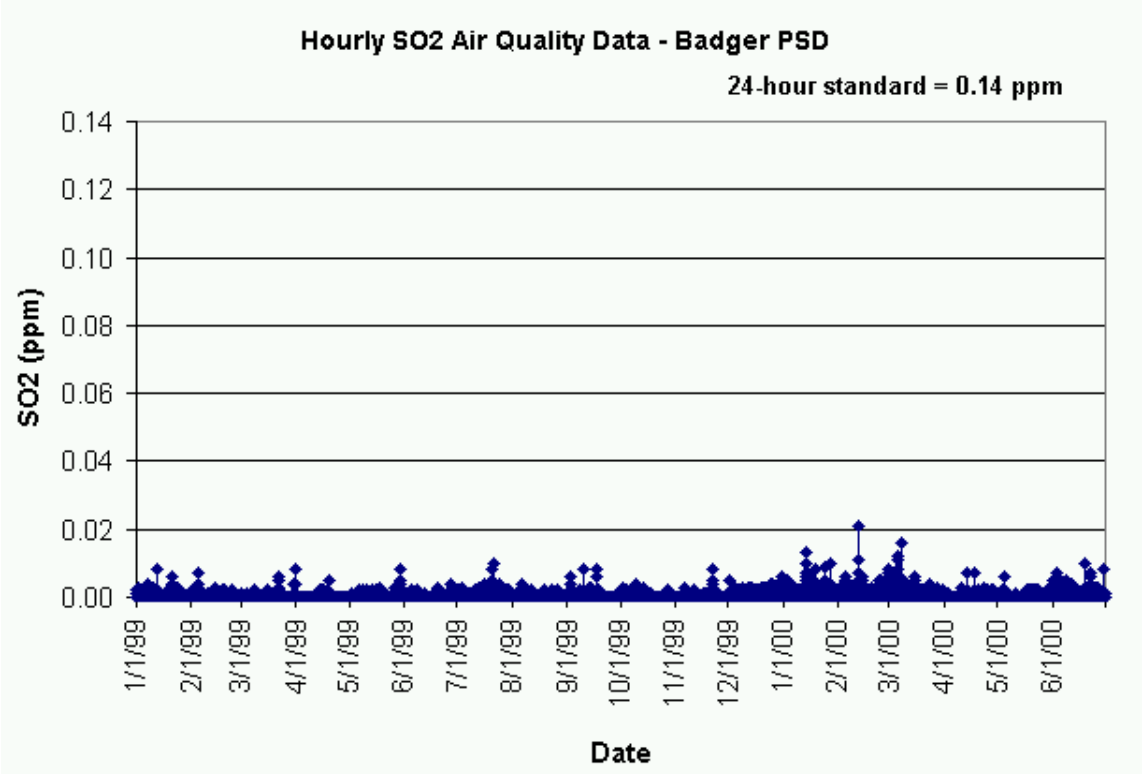
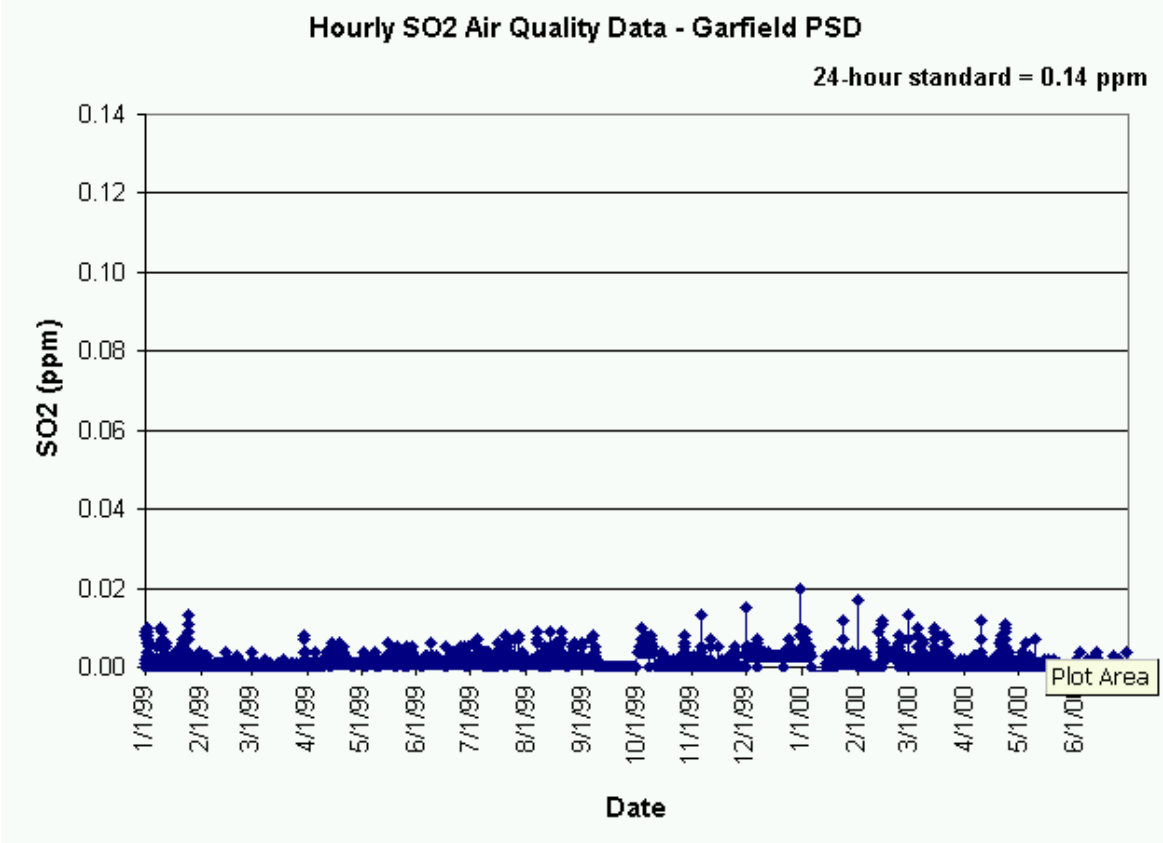


Figure E-2



Appendix E
Air Quality Data
Northern Cheyenne Reservation

Figure E-3

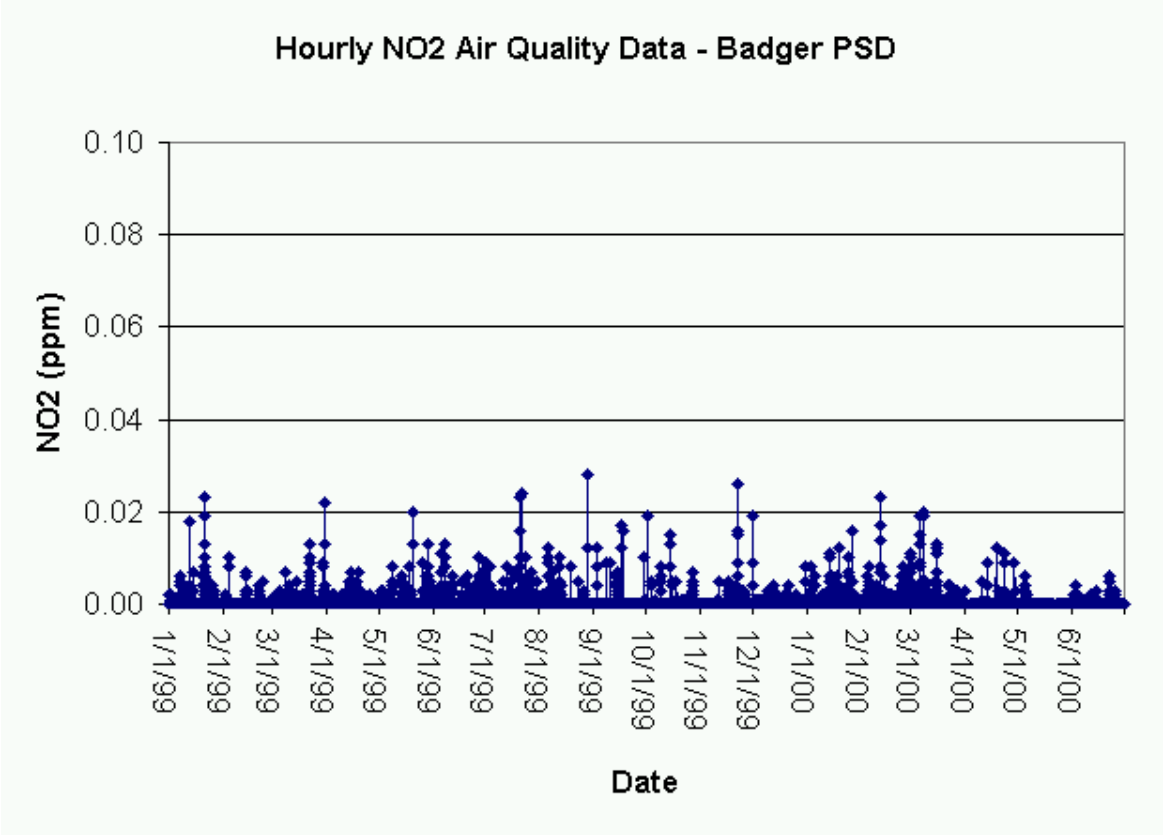
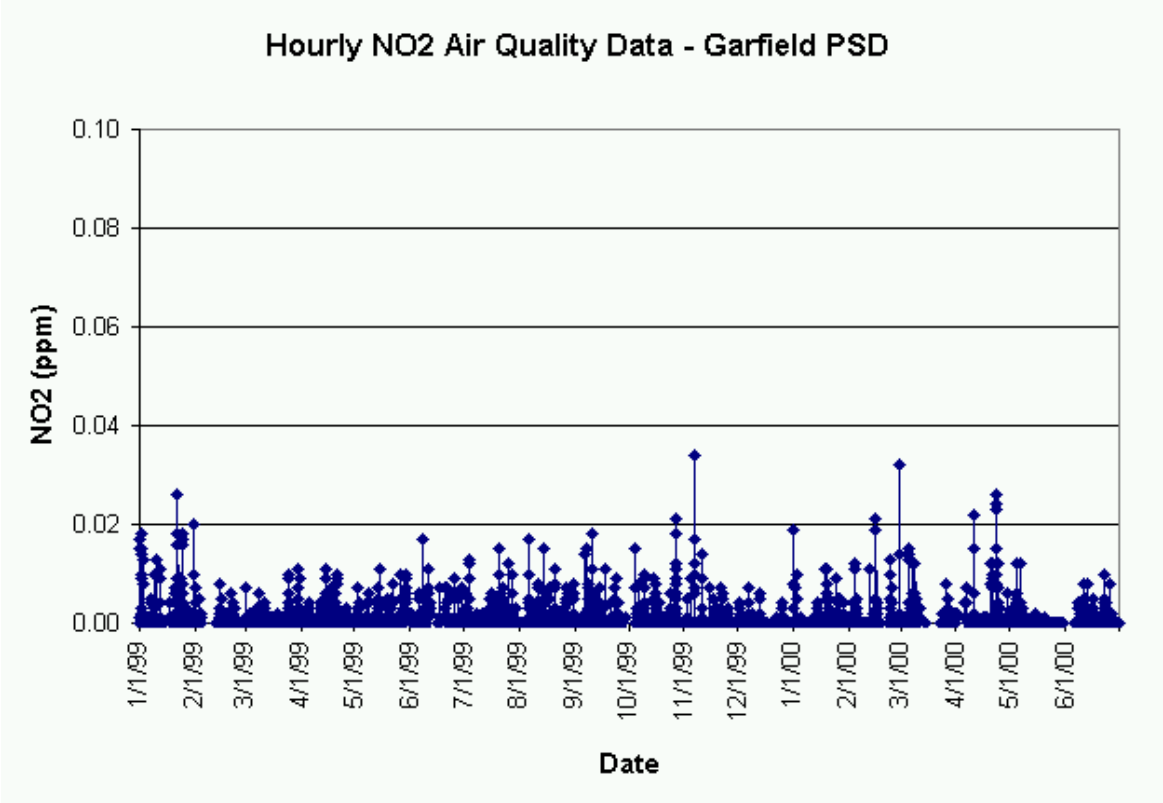


Figure E-4



APPENDIX F
NORTHERN CHEYENNE TRADITIONAL CULTURAL PLANT USE

COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Fir, Subalpine	*Abies lasiocarpa*	Industrial (various-needles), Medicinal (various-needles, bark), Religious (various-entire plant), Horse Medicine (needle), Food (cone)	Hart, J. 1976
Fir, Subalpine	*Abies lasiocarpa*	Ceremonial; Medicinal	NCPO 1981b:12, Tallbull 1993:1
Fir	*Abies spp*	Industrial (traps, weirs, snowshoes-wood, bucket-bark), Religious, Medicinal (purify-needles)	Grinnell 1923
Box Elder	*Acer negundo*	Ceremonial	NCPO 1981b:12
Box Elder	*Acer negundo*	Food (sweetener-sap), Industrial (wood products-wood), Religious (Sundance, sacred fuel-wood)	Deaver and Tallbull 1988, US Congress 1978, Rogers 1980, Tallbull 1993:58
Box Elder	*Acer negundo*	Maple; Food (sugar from sap); Industrial (pipestems, bowls, firewood)	Mulloy 1958 and Hart 1976 in Fredlund 1977:12
Yarrow, Western	*Achillea lanulosa*	Medicinal coughs, bleeding wounds)	Hart 1976 in Fredlund 1977:13, Tallbull 1993:2
Yarrow	*Achillea millefolium*	Medicinal (plant-cough, throat irritation, styptic, colds, nausea)	Kindscher 1992:18
Yarrow	*Achillea millefolium and var. lanulosa*	Medicinal (hemostat, dressing, respiratory, various others-leaves, flower), Horse Medicine (plant), Food (tea-leave)	Deaver and Tallbull 1988, US Congress 1978, Hart 1976, Grinnell 1923, Rogers 1980
Yarrow	*Achillea spp*	Medicinal	NCPO 1981b:12
Calamus	*Acorus calamus*	Medicinal (root-bowel pain, skin irritation); Religious (root-scares away children's night spirits)	Kindscher 1992:25
Sweet Flag	*Acorus calamus (introduced)*	Medicinal (digestive, general-root), Industrial (smoking-root), Religious (ghosts-root), Food (leaves, stems)	Grinnell 1923, Rogers 1980, Tallbull 1993:1
Baneberry	*Actaea rubra (arguta)*	Religious (Sweet Medicine, lactation, general-root)	Hart 1976, Grinnell 1923, Tallbull 1993:3
Hyssop, Fragrant Giant	*Agastache anethiodora (foeniculum)*	Food (leaves), Medicinal (chest pain-leaves)	Grinnell 1923, Rogers 1980
Hyssop, Lavender	*Agastache foeniculum*	Medicinal (leaves-chest pain, weak heart, cough, cold); Domestic (leaves-perfume)	Kindscher 1992:224-225

APPENDIX F
NORTHERN CHEYENNE TRADITIONAL CULTURAL PLANT USE

COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Wheatgrass	*Agropyron spp*	Food (fruit)	Mulloy 1958 in Fredlund 1977:13
Onion, Wild	*Allium canadense*	Medicinal (roots and stems-carbuncles)	Kindscher 1992:29
Onion	*Allium spp*	Food (bulb), Medicinal (various-bulb), Horse Medicine (bulb), Industrial (deodorant, polish-bulbs)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Tallbull 1993:4
Ragweed	*Ambrosia artemisifolia*	Medicinal (leaves and stems-bowel cramps, bloody stool, colds, constipation)	Kindscher 1992:34
Ragweed, Western	*Ambrosia psilostachya*	Medicinal (digestive-leaves, stem)	Grinnell 1923, Tallbull 1993:3
Juneberry	*Amelanchier alnifolia*	Serviceberry; Ceremonial (berry), Industrial (wood products-wood), Horse Medicine (stem), Medicine (digestive, eye/ear-berry, leaves); Food (berry)	Deaver and Tallbull 1988,US Congress 1978, 1941, Hart 1976, Grinnell 1923, Rogers 1980, Tallbull 1993:6
Pearly-everlasting	*Anaphalis margaritacea*	Religious (purify-leaves, flowers)	Grinnell 1923, Tallbull 1993:5
Mustard, Tower	*Arabis glabra*	Medicinal (general, respiratory-root)	Grinnell 1923
Cress, Rock	*Arabis hoboelli*	Food	Deaver and Tallbull 1988
Burdock	*Arctium minus (introduced)*	Medicinal, Food, Industrial (yellow dye)	Deaver and Tallbull 1988, Tallbull 1993:70
Kinnikinnink	*Arctostaphylos uva-ursi*	Food (fruit); Ceremonial (leaves-tobacco)	Blankenship 1905:7, Tallbull 1993:7
Kinnikinnick/ Bearberry	*Arctostaphylos uva-ursi*	Industrial (smoking-leaves; jewelry, toys-berry), Food (berries), Medicinal (various-leaves, stems, berries)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Hart 1976, Rogers 1980, Tallbull 1993:7
Sage, Prairie	*Artemisia*	Ceremonial; Medicinal; Food	NCPO 1981b:12
Sagewort, Fringed	*Artemisia frigida*	Medicinal (various-herbage), Religious (purify-herbage), Industrial (various-herbage), Horse Medicine (plant), Food (leaves)	Deaver and Tallbull 1988, US Congress 1978, Hart 1976, Tallbull 1993:8
Sage, White	*Artemisia ludoviciana*	Man Sage Ceremonial (incense when mixed with Actea rubra, purification, favored by Contrary Warriors, drive away bad spirits, fasting beds)	Kindscher 1992:48-49, Tallbull 1993:9

APPENDIX F
NORTHERN CHEYENNE TRADITIONAL CULTURAL PLANT USE

COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Sage, White	*Artemisia ludoviciana*	Ceremonial (plant-Sundance and Standing Against Thunder ceremony)	Kindscher 1992:49
Sage, White	*Artemisia ludoviciana*	Medicinal (leaves-snuff for sinus attacks, nosebleeds, headache)	Kindscher 1992:49
Sagewort, Prairie	*Artemisia ludoviciana (A. gnaphalodes)*	Religious (sweatlodge ceremony-herbage), Medicinal (respiratory, skin-leaves), Horse Medicine (plant), Food (leaves)	Grinnell 1923
Manroot	*Artemisia ludoviciana ?*	Medicinal -- Collected along Tongue River	NCPO 1981a:13
Sage, White "Man"	*Artemisia ludoviciana ?*	Ceremonial (sacred; bed for Mahuts)	Powell 1969:35
Sage	*Artemisia spp*	Ceremonial (sage blankets for priests to sit on inside the Lone Tipi)	Dorsey 1905:72
Sage, White	*Artemisia spp*	Ceremonial (ritual purification; ceremony into womanhood)	Grinnell 1923:130
Sage	*Artemisia spp*	Ceremonial (used as fasting bed)	Powell 1969:385
Sage, White	*Artemisia spp*	Ceremonial (bed for Buffalo Hat)	Powell 1969:409
Sage	*Artemisia spp*	Medicinal (various-herbage), Religious (various-herbage), Industrial (deodorant-leaves)	Hart 1976, Rogers 1980
Sage, Big	*Artemisia tridentata*	Food (flavoring-leaves), Medicinal (respiratory-herbage), Horse Medicine (herbage)	Deaver and Tallbull 1988, Grinnell 1923, Hart 1976
Milkweed	*Asclepias speciosa*	Food (flowers, seeds); Industrial ("milk"-temporary marking of stock); Sundance Ceremony begins after plant is cooked and used as food offering	Blankenship 1905:7, Aaberg and Tallbull 1993:10
Milkweed, Showy	*Asclepias speciosa*	Medicinal (top of plant-snowblindness)	Kindscher 1992:56
Milkweed	*Asclepias spp*	Industrial (bowstring)	Grinnell 1923:176
Milkweed, Showy	*Asclepias spp*	Religious, Food (buds, gum), Industrial (branding-sap), Medicinal (ophthalmic-herbage, digestive-root)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Hart 1976
Aster	*Aster foliaceus*	Medicinal (stems-earache)	Kindscher 1992:61-62, Tallbull 1993:77

APPENDIX F
NORTHERN CHEYENNE TRADITIONAL CULTURAL PLANT USE

COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Aster	*Aster spp*	Medicinal (enema, earache-plant), Horse Medicine (plant), Industrial, Religious (sacred necklace-flower)	Grinnell 1923
Milkvetch, Standing	*Astragalus adsurgens*	Medicinal (unspecified-poison ivy, plant dermatitis; leaves and stems-treated inflamed skin with watery apparently)	Kindscher 1992:66
Milkvetch, Two-grooved	*Astragalus bisulcatus*	Medicinal	Deaver and Tallbull 1988, US Congress 1978
Plum, Ground	*Astragalus crassicarpus*	Food (fruit), Horse Medicine (plant)	Deaver and Tallbull 1988, US Congress 1978, Rogers 1980
Milkvetch, Prairie	*Astragalus striatus (A. nitidus)*	Medicinal (skin rashes, poison ivy-leave, stem)	Grinnell 1923
Balsamroot, Arrowleaf	*Balsamorhiza sagittata*	Food (flower stem, root, seeds), Medicinal (various-root, leaves), Religious (incense-root)	Grinnell 1923, Hart 1976, Tallbull 1993:11
Mullein Plant	*Berbascum thapsus*	Medicinal (era ache, lungs)	Tallbull 1993:64
Big Medicine	*c.f. Lomatium triternatum spp. platycarpum*	Medicinal (essential ingredient to many medicinal mixtures) -- Found at Tongue River Dam and Poker Jim Creek	Stands in Timber and Liberty 1972:107, 109-110
Lily, Mariposa	*Calochortus gunnisonii*	Food (bulb)	Deaver and Tallbull 1986, Grinnell 1923, Tallbull 1993:71
Lily, Sego	*Calochortus nuttallii*	Medicinal	Deaver and Tallbull 1988
Shepard's Purse	*Capsella bursa-pastoris (introduced)*	Medicinal (headache-stem, leave)	Deaver and Tallbull 1988, Grinnell 1923, Tallbull 1993:12
Sedge, Beaked	*Carex rostrata*	Ceremonial	Aaberg and Tallbull 1993:27
Sedge, Saw-Beak	*Carex stipata*	Ceremonial (Medicine Lodge Ceremony)	Tallbull 1993:79
Lamb's-quarter Salt Sage)	*Chenopodium album*	Food (leaves)	Deaver and Tallbull 1986, Gilmore 1977, Tallbull 1993:68
Aster, Golden	*Chrysopsis villosa*	Medicinal (tops and stems-soothing tea, tonic); Ceremonial (incense to drive evil spirits from people/homes-no special ceremony)	Kindscher 1992:233
Aster, Hairy Gold	*Chrysopsis villosa var. foliosa*	Medicinal (depressant/relaxant-top, stem)	Grinnell 1923

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Rabbitbrush, Rubber	*Chrysothamnus*	Medicinal (skin-leaves, stem)	Grinnell 1923, Tallbull 1993:12
Rubber Rabbitbrush; Scabby Medicine	*Chrysothamnus nauseosus*	Medicinal (leaves and stems-itch, smallpox; mixed w/sage-colds, coughs, tuberculosis); Ceremonial (leaf and branch-relieve nightmare)	Kindscher 1992:233-234, Tallbull 1993:12
Thistle, Canada	*Cirsium arvense*	Food	Aaberg and Tallbull 1993:21
Thistle, Indian (Elk Thistle)	*Cirsium edule*	Food (stem)	Grinnell 1923, Tallbull 1993:13
Thistle	*Cirsium spp*	Food (pedicel, stem)	Grinnell 1923, US Congress 1978
Thistle, Wavy-leaf	*Cirsium undulatum*	Food	Aaberg and Tallbull 1993:21
Dogwood, Redosier/Red Willow	*Cornus stolonifera*	Red Willow; Medicinal (liver, respiratory-bark); Ceremonial (sweatlodge-stems); Industrial (various-entire plant); Food (berries, bark)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Hart 1976, Rogers 1980, Tallbull 1993:13
Willow, Red	*Cornus stolonifera*	Ceremonial (inner bark-tobacco); Industrial (branches-fishnets); Medicinal (inner bark-ulcers)	Blankenship 1905:11, Tallbull 1993:13
Willow, Red	*Cornus stolonifera**	Industrial (arrows, kettle hangers, cooking racks)	Grinnell 1923:179, Tallbull 1993:13
Willow, Red	*Cornus stolonifera**	Ceremonial (mixed with tobacco for smoke-prayer)	Grinnell 1923:75
Willow, Red/Redosier Dogwood	*Cornus stolonifera**	Industrial (various-entire plant), Food (berries, bark), Medicinal (liver, respiratory-bark), Religious (sweatlodge-stems)	Deaver 1988, Grinnell 1923, US Congress 1978, Hart 1976, Rogers 1980, Tallbull 1993:13
Hawthorn Bush	*Craetagus oxyacantha*	Food	Tallbull 1993:69
Hawthorn, Black	*Crataegus douglasii (Virbrunum prunifolium)*	Food (berry), Medicinal (weak heart)	Grinnell 1923, Tallbull 1993:14
Sage Plant / Wanowa	*Dasiphora fruiticosa*	Ceremonial (Contrary Dance and Dog Dance); Horse Medicine -- Found only in Tetons and in Wolf Mountains on west side of Rosebud	Stands in Timber and Liberty 1972:107-109
Coneflower, Purple	*Echinaceae angustifolia*	Medicinal (leaves and root-sore mouth and gums, sore neck, toothache, rheumatism, arthritis, mumps, measles)	Kindscher 1992:87, Tallbull 1993:16

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Coneflower, Purple	*Echinaceae angustifolia*	Ceremonial (root-stimulated salivation for participants in the Sundance)	Kindscher 1992:87
Coneflower, Purple	*Echinaceae angustifolia*	Medicinal (root mixed with Blazing Star [Mentzelia laevicaulis]-smallpox)	Kindscher 1992:87
Coneflower, Purple	*Echinaceae angustifolia*	Medicinal (root mixed with puffball [Lycoperdon sp..] and skunk oil-boils)	Kindscher 1992:87
Coneflower, Purple	*Echinaceae pallida and var. angustifolia*	Medicinal (anti-venom, arthritic, respiratory, dressing, boils, mouth, throat, and others-root, leaves)	Hart 1976, Grinnell 1923, Rogers 1980
Rush, Spike	*Eleocharis spp*	Food; Industrial (basket making-plant)	Grinnell 1923, Tallbull 1993:16
Fireweed (Red Root Plant)	*Epilobium angustifolium (Chamaenerion)*	Medicinal (enema, digestive-root, inner cortex, leave), Food (root), Industrial (waterproof-flower)	Grinnell 1923, Tallbull 1993:17
Horsetail, Common/Scouring Rush	*Equisetum arvense and hyemale*	Medicinal (diuretic, poultice, menstrual, skin-stems), Horse Medicine (stem, root), Industrial (abrasive, mats-stem)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Hart 1976, Gilmore 1977, Tallbull 1993:18
Fleabane	*Erigeron peregrinus*	Medicinal (plant-backache, dizziness, drowsiness)	Kindscher 1992:97, Tallbull 1993:18
Daisy, Wandering	*Erigeron peregrinus ssp. callianthemus*	Medicinal (dizziness, backache, drowsiness-root, stem, flower)	Grinnell 1923, Tallbull 1993:18
Sulfurflower	*Eriogonum umbellatum var. subalpinum*	Medicinal (Women's medicine, menstrual-flowers, stems)	Grinnell 1923, Tallbull 1993:19
Joe Pye Weed	*Eupatorium maculatum*	Medicinal (fevers, backache)	Tallbull 1993:19
Lichen, Tree	*Evernia vulpina*	Medicinal (digestive, skin-plant), Industrial (yellow dye-plant)	Grinnell 1923, Tallbull 1993:20
Moss, Tree	*Evernia vulpina*	Domestic (plant-clothing, bedding, yellow dye/paint); Medicinal (plant-reduce inflammation of ulcers)	Blankenship 1905:12, Tallbull 1993:20
Devil's Walking Stick	*Fatsia horrida*	Ceremonial (root-"stinking medicine"), Medicinal (root-headache)	Blankenship 1905:12
Strawberry, Wild	*Fragaria vesca*	Food (berry), Medicinal (digestive-plant)	Deaver and Tallbull 1988, Grinnell 1923, Tallbull 1993:20
Frasera, Giant	*Frasera spp*	Medicinal (diarrhea-leaves, root)	Grinnell 1923

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Ash, Green	*Fraxinus pennsylvanica*	Industrial (wood products-wood), Ceremonial (Sundance lodge-wood)	Hart 1976, Rogers 1980, Tallbull 1993:59
Fritillary, Yellow	*Fritillaria pudica*	Food (corm)	US Congress 1978, Hart 1976,
Blanket Flower	*Gaillardia aristata*	Medicinal (flower-sunstroke medicine)	Kindscher 1992:247, Tallbull 1993:79
Bedstraw, Northern	*Galium boreale*	Medicinal (root)	Deaver and Tallbull 1988, US Congress 1978
Geranium, White	*Geranium richardsonii*	Medicinal (nosebleed-leaf, root)	Grinnell 1923, Tallbull 1993:21
Licorice, American	*Glycyrrhiza lepitdota*	Medicinal (root and leaves-diarrhea, upset stomach)	Kindscher 1992:114
Licorice, American	*Glycyrrhiza lepitdota*	Ceremonial (root-used to cool mouth during Sundance)	Kindscher 1992:115
Licorice	*Glycyrrhiza lepitdota*	Medicinal (various-root, leaves), Religious (Sundance, sweatlodge-root), Food (stem), Horse Medicine (root)	Deaver and Tallbull 1988, Grinnell 1923, Hart 1976, Rogers 1980, Tallbull 1993:22
Gumweed, Curly-top	*Grindelia squarrosa*	Medicinal (flower-skin disease, scabs, sores; gummy residue-eye medicine, snowblindness)	Kindscher 1992:120
Gumweed, Curlycup	*Grindelia squarrosa*	Medicinal (various-plant, flower), Horse Medicine (plant)	Deaver and Tallbull 1988, US Congress 1978, Hart 1976, Rogers 1980, Tallbull 1993:23
Golden Rod (Broom Snakeweed)	*Gutierrezia sarothrae*	Medicinal (colds), Ritual (purify)	Tallbull 1993:68
Sneezeweed	*Helenium autumnale*	Medicinal (headaches)	Tallbull 1993:24
Sneezeweed	*Helenium autumnale*	Medicinal (pneumonia)	Stands in Timber and Liberty 1972:110
Jerusalem Artichoke	*Helianthus tuberosus*	Food (root)	Grinnell 1923, Rogers 1980, Tallbull 1993:25
Parsnip, Cow	*Heracleum lanatum*	Food (shoots); Medicinal (root-rheumatism); Industrial (playthings)	Blankenship 1905:13, Tallbull 1993:63
Alumroot	*Heuchera cylindrica*	Medicinal (root-rheumatism, sores muscles)	Kindscher 1992:124, Tallbull 1993:25
Alumroot	*Heuchera cylindrica (H. ovalifolia)*	Medicinal (digestive, arthritic-root)	Hart 1976, Grinnell 1923

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Sweetgrass	*Hierochloe odorata*	Religious (various-plant, purification in Sundance and Sacred Arrows, Protection), Industrial (perfume, hairwash-leaves), Medicinal (various-leaves)	Hart 1976, , Grinnell 1923, Gilmore 1977, Tallbull 1993:62
Sweetgrass	*Hierochloe odorata*	Ceremonial (plant-used in Sundance and Sacred Arrow ceremony)	Kindscher 1992:256
Big Root	*Ipomoea leptophylla*	Food (famine food)	Blankenship 1905:13
Rush, Baltic	*Juncus balticus*	Food; Industrial (ornamentation-root; baskets-stems)	Grinnell 1923, Tallbull 1993:26
Juniper, Common	*Juniperus communis*	Medicinal (respiratory, reproductive-needles, cones)	Hart 1976, Grinnell 1923, Gilmore 1977, Tallbull 1993:27
Juniper	*Juniperus communis and scopulorum*	Ceremonial (flute charm)	Grinnell 1923:204-205
Juniper	*Juniperus communis and scopulorum*	Ceremonial (ritual purification; ceremony into womanhood)	Grinnell 1923:130
Juniper, Rocky Mountain	*Juniperus scopulorum*	Religious (entire plant), Industrial (bow-wood), Medicinal (various-needles, cones, boughs), Horse Medicine (needles)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Hart 1976
Juniper, Rocky Mountain	*Juniperus scopulorum*	Ceremonial (plant-purification during ceremonial rites, healing rites, and religious rites)	Blankenship 1905 in Davis et al. 1982:222, Tallbull 1993:27
Juniper	*Juniperus sopulorum, Sarg.*	Industrial (wood bows)	Grinnell 1923:173
Junegrass, Prairie	*Koeleria cristata*	Ritual (when plant blooms determines when Sundance starts)	Tallbull 1993:28
Puccoon, Narrow-leafed (White Weed, Western Gromwell)	*Lithospermum incisum (L. linearifolium)*	Medicinal (paralysis, mental-leaves, root, stem; chest wounds-root)	Grinnell 1923, Rogers 1980, Tallbull 1993:30
Puccoon	*Lithospermum incisum Lehm.*	Medicinal (root, leaves, stems-paralysis, delirium, stimulant)	Kindscher 1992:143
Gromwell	*Lithospermum ruderale*	Industrial (toy-stem), Medicinal (rheumatic-leaves, stem)	Grinnell 1923
Puccoon	*Lithospermum ruderale*	Medicinal (leaves and stems-salve for rheumatism)	Kindscher 1992:143
Big Medicine	*Lomatium*	Medicinal (cure all for many illnesses), Ritual (protection, cleaning)	Tallbull 1993:71

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Biscuit Root	*Lomatium cous (Cogswellia)*	Food (root), Medicinal (various-root, leaves), Religious (incense-root), Horse Medicine (root)	Hart 1976, Grinnell 1923
Lomatium, Fern-leafed	*Lomatium dissectum and var. multifidum*	Horse Medicine (plant), Medicinal (digestive, pediatrics-root, leaves)	Grinnell 1923
Parsely/ Biscuitroot	*Lomatium foeniculaceum*	Food	Aaberg and Tallbull 1993:19
Lomatium, Eastern	*Lomatium orientale*	Wild Parsley; Medicinal (pediatrics-root, leaves)	Grinnell 1923
Parsley, Wild	*Lomatium orientale*	Medicinal (pediatrics-root, leaves)	Grinnell 1923
Skeleton Weed	*Lygodesmia juncea*	Medicinal (stems-promotes lactation, healthy fetus development, small pox, measles)	Kindscher 1992:261, Tallbull 1993:29
Skeleton Plant, Rush	*Lygodesmia juncea*	Medicinal (respiratory, digestive, various others-plant), Food (flavoring-sap), Horse Medicine (plant), Industrial (various)	Deaver and Tallbull 1988, Grinnell 1923, Hart 1976, Rogers 1980
Tarweed	*Madia glomerata*	Medicinal (plant-"love sickness"); Ceremonial (plant-sweatbaths, charm to attract women)	Kindscher 1992:262
Oregan Grape	*Mahonia repens*	Food (berries), Ritual (yellow dye)	Tallbull 1993:56
Cactus, Pincushion (Ball)	*Mamillaria vivipara (Coryphantha)*	Food (fruit), Medicinal (diarrhea-fruit, ophthalmic-seed)	Deaver and Tallbull 1988
Pineappleweed (Prairiedog Perfume)	*Matricaria matricarioides*	Medicinal (various-herbage), Food (preservative-herbage), Industrial (perfume-leaves)	Hart 1976, Tallbull 1993:31
Fungus	*Melampsorella elatina*	Ceremonial, Medicinal (incense-plant)	Grinnell 1923
Clover, Yellow Sweet	*Melilotus officinalis (introduced)*	Medicinal (?), Ceremonial (plant)	Deaver and Tallbull 1988, Rogers 1980
Mint, Wild	*Mentha arvensis (M. canadensis)*	Field Mint; Ceremonial (tea-leaves), Medicinal (various-leaves), Industrial (insect repellant, perfume-leaves), Food (leaves)	Deaver and Tallbull 1988, US Congress 1978, Hart 1976, Grinnell 1923, Gilmore 1977, Tallbull 1993:32
Mint	*Mentha arvensis L.*	Ceremonial, Medicinal (leaves and stems-treats vomiting, strengthen heart, stimulate vital organs), Domestic (perfume, hair oil)	Kindscher 1992:153

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Lily, Sand	*Mentzelia nuda*	Medicinal (root-fever, earache, rheumatism, arthritis, mumps, measles, smallpox, thirst prevention)	Kindscher 1992:263
Bluebell, Broad-leaf	*Mertensia ciliata*	Medicinal (smallpox, measles-leaves, root; lactation-plant)	Grinnell 1923, Tallbull 1993:323
Mint, Horse	*Monarda fistulosa and var. menthifolia*	Medicinal (various-herbage, root), Industrial (perfume, deodorant, insect repellant-leaves; spoon/straw-flower), Ritual (Puberty)	Hart 1976, Grinnell 1923, Rogers 1980, Tallbull 1993:33
Water Plant	*Nasturtium officinale*	Food (entire plant), Medicinal (diuretic, skin irritations, liver)	Tallbull 1993:34
Tobacco, Wild	*Nicotiana attenuata and quadrivalvis*	Ceremonial (pipe; offering)	Dorsey 1905:77
Tobacco	*Nicotiana spp*	Ceremonial (twist of tobacco in Buffalo Hat medicine bundle)	Powell 1969:409
Spatterdock	*Nuphar polysepalum (Nymphaea)*	Food (root)	Grinnell 1923
Lily, Yellow Pond	*Nuphar variegatum*	Food (root, seeds), Medicinal (dressing, reproductive, rheumatism-root), Horse Medicine (root)	Hart 1976, Rogers 1980, Tallbull 1993:34
Gromwell, False	*Onosmodium molle*	Medicinal (leaves and stems-restore feeling to numb area, lumbago)	Kindscher 1992:265, Tallbull 1993:72
Gromwell, False	*Onosmodium molle var. occidentale*	Medicinal (numbness-leaves, stem; swelling-seeds, root), Horse Medicine (seed, root)	Grinnell 1923, Rogers 1980
Cactus, Brittle Prickly Pear	*Opuntia fragilis*	Food	Aaberg and Tallbull 1993:25
Cactus, Prickly Pear	*Opuntia polyacantha*	Food (buds, stems), Industrial (paint preservative-stem), Medicinal (dressing, digestive-stems; urinary-root)	Grinnell 1923, Hart 1976, Rogers 1980, Tallbull 1993:35
Sweet Cicely, Blunt-fruit	*Osmorhiza depauperata (O. obtusa)*	Medicinal (digestive, kidney-leave, stem, root)	Grinnell 1923, Tallbull 1993:73
Sweet Medicine / Sweet Root	*Oxtropis (lambertii)*	Ceremonial (used in Blinding Ceremony; also spat onto horses hooves as blessing)	Powell 1969:34
Sweet Medicine	*Oxtropis (lambertii)*	Ceremonial (sacred; piece in medicine bundles; cultural hero transformed into this plant; used in ceremonies)	Powell 1969:53-54

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Locoweed	*Oxytropis sp.*	Medicinal (mixed w/baneberry-increase milk flow in nursing mothers)	Kindscher 1992:266
Crazyweed/Sweet Medicine	*Oxytropis splendens*	Medicinal (lactation-root)	Grinnell 1923, Tallbull 1993:36
Grass-of-Parnassus, Fringed	*Parnassia fimbriata*	Medicinal (pediatrics-plant)	Grinnell 1923, Tallbull 1993:75
Elephant's Head (Pink Medicine)	*Pedicularis groenlandica*	Medicinal (cough-leaves, stem)	Grinnell 1923, Tallbull 1993:37
Yampa/Indian Carrot	*Perideridia gairdneri (Carum gairdneri)*	Food (root), Medicinal (diuretic, laxative, respiratory, dressing, general-root), Horse Medicine (root), Industrial (polish-plant)	US Congress 1978, Hart 1976, Grinnell 1923, Tallbull 1993:38
Clover, Prairie/Purple Cornflower	*Petalostemon purpureum*	Medicinal (root, leave, blossom), Food (tea-leaves; gum-root)	Deaver and Tallbull 1988, Rogers 1980
Cornflower, Purple/Prairie Clover	*Petalostemon purpureum*	Medicinal (root, leave, blossom), Food (tea-leaves; gum-root)	Deaver and Tallbull 1988, Rogers 1980
Phlox, Many-flowered	*Phlox multiflora*	Medicinal (stimulant-leaves, flower)	Grinnell 1923, Tallbull 1993:78
Pine, Lodgepole	*Pinus contorta*	Industrial (poles), Food (bark, nuts, pitch), Medicinal (burns, boils-pitch; TB-bark, pitch)	Hart 1976, Tallbull 1993:76
Pine, Ponderosa	*Pinus ponderosa*	Food (bark, pitch), Industrial (adhesive, torch-pitch), Medicinal (various-pitch, needles, boughs)	US Congress 1978, Hart 1976, Tallbull 1993:61
Pine, Yellow	*Pinus ponderosa*	Industrial (trunks-dugouts); Domestic (twigs-twirling sticks); Food (inner bark)	Blankenship 1905:18
Pine, Ponderosa	*Pinus ponderosa*	Cultural uses	NCPO 1981b:12
Pine, Ponderosa	*Pinus ponderosa*	Resin used as telepathic chewing gum to transmit thoughts from recipient to giver	Tallbull 1/12/93
Plaintain, Common	*Plantago major*	Medicinal	Deaver and Tallbull 1988
Bistort, American	*Polygonum bistortoides (Bistorta)*	Food (root)	Grinnell 1923, Tallbull 1993:73
Cottonwood	*Populus angustafolia*	Industrial (various-wood, bud, sap), Religious (Sundance pole), Medicinal (various-leaves, bark, buds), Horse Medicine (leaves)	Hart 1976, Rogers 1980

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Cottonwood	*Populus angustafolia*	Ceremonial (centerpole for Sundance lodge; taken from Tongue River Valley in 1961)	Powell 1969:616
Cottonwood	*Populus deltoides*	Domestic (wood-fire, shelter); Industrial (bark-cordage); Food (inner bark-human, twigs-horse), Ceremonial (Sundance Lodge)	Blankenship 1905:19, Tallbull 1993:57
Aspen, Quaking	*Populus tremuloides*	Medicinal (ruptures, birth, general-bark), Industrial, Religious (Sundance lodge-logs), Horse Medicine (bark), Food (cambium)	Hart 1976
Cinquefoil, Shrubby	*Potentilla fruticosa*	Ceremonial (used in Contrary Dance; leaves-empowered those against enemies); Industrial (plant-poisoned arrow tips)	Kindscher 1992:271, Tallbull 1993:15
Cinquefoil, Shrubby	*Potentilla fruticosa*	Industrial (plant-poisoned arrow tips for holy people)	Kindscher 1992:271-272
Cinquefoil, Shrubby	*Potentilla fruticosa (Dasiphora)*	Food (leaves), Industrial (pillow-leaves), Religious (burn protection-leaves)	Grinnell 1923
Cherry, Wild	*Prunas emarginata*	Industrial (arrows)	Grinnell 1923:179
Plum, Wild	*Prunus americana*	Medicinal (fruit mixed w/salt-mouth disease; root and bark mixed w/scarlet thorn-diarrhea)	Kindscher 1992:274
Plum, Wild	*Prunus americana*	Food (berry)	Grinnell 1923, Gilmore 1977, Rogers 1980, Tallbull 1993:39
Cherry, Sand / Sandhills Cherry	*Prunus pumila (P. besseyi)*	Food (berry)	Grinnell 1923, Rogers 1980
Chokecherry	*Prunus virginiana*	Medicinal; Food	NCPO 1981b:12
Chokecherry	*Prunus virginiana*	Food (Pemmican Mountains)	Powell 1969:127
Chokecherry	*Prunus virginiana (melanocarpa)*	Food (berry), Medicinal (various-bark, berry), Industrial (wood products-wood, glue-sap)	Deaver and Tallbull 1988, US Congress 1978, Hart 1976, Grinnell 1923, Rogers 1980, Tallbull 1993:40
Sweetroot, Mountain	*Psmorrhiza chilensis*	Medicinal (stomach, kidneys)	Tallbull 1993:35
Scurfpea, Silver-leafed	*Psoralea argophylla*	Medicinal (fever, general-leaves, stems), Industrial (basketry-stem), Horse Medicine (root)	Grinnell 1923, Rogers 1980, Kindscher 1992:177, Tallbull 1993:41
Turnip, Prairie	*Psoralea esculenta*	Food (gathered in June)	Grinnell 1962 in Reid 1977:321

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Turnip, Indian	*Psoralea esculenta*	Food (root), Medicinal (colic, digestive, throat, respiratory, dressing, ophthalmic-root), Industrial (ornaments-root)	Deaver and Tallbull 1988, Grinnell 1923, US Congress 1978, Hart 1976, Rogers 1980
Bread Root, Subterranean	*Psoralea hypogaea*	Food (root)	Grinnell 1923, Tallbull 1993:42
Scurfpea, Lance-leaf	*Psoralea lanceolata*	Food (root)	Grinnell 1923
Pinedrops	*Pterospora andromedea*	Industrial (hair tonic-herbage), Medicinal (nosebleed, lungs-stem, berry)	Hart 1976, Grinnell 1923, Tallbull 1993:43
Coneflower, Prairie	*Ratibida columnifera*	Medicinal (leaves and stems-snakebite, pain, poison ivy)	Kindscher 1992:181
Coneflower (Yellow)	*Ratibida columnifera (R. columnaris)*	Medicinal (snakebite, poison ivy-leaves, stem; headache, stomachache-tops), Horse Medicine (plant)	Grinnell 1923, Rogers 1980, Tallbull 1993:44
Sumac, Aromatic	*Rhus aromatica*	Ceremonial (leaf mixed with tobacco, red willow dogwood, bearberry-tobacco)	Kindscher 1992:185
Sumac, Aromatic	*Rhus aromatica*	Medicinal (leaves-colds, diuretic, styptic; fruit-toothache); Horse Medicine (plant)	Kindscher 1992:185
Sumac, Smooth	*Rhus glabra*	Medicinal (various-fruit, root, branches), Industrial (smoking, dye-leaves)	Hart 1976, Grinnell 1923, Rogers 1980
Skunkbrush	*Rhus trilobata*	Sumac; Industrial (smoking-leaf)	Deaver and Tallbull 1988, Grinnell 1923, Rogers 1980
Currant, Golden	*Ribes aureum*	Food (berry)	Grinnell 1923, Tallbull 1993:45
Gooseberry, Wild; Redshoot	*Ribes cereum*	Food (berry)	Blankenship 1905:21, Tallbull 1993:24
Currant, Squaw	*Ribes cereum and var. inebrians*	Food (berry)	US Congress 1978, Grinnell 1923
Currant, Swamp/Elkberry	*Ribes lacustre*	Food (berry)	Grinnell 1923
Gooseberry, Redshoot	*Ribes setosum (Grossularia)*	Food (berry)	Grinnell 1923
Currant	*Ribes spp*	Industrial (arrows)	Grinnell 1923:178-179
Rose, Prickly Wild	*Rosa acicularis*	Food	Deaver and Tallbull 1988
Rose Bush	*Rosa arkansas*	Medicinal (vitamin C)	Tallbull 1993:46

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COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Rose, Wild	*Rosa sp.*	Medicinal (petals, stem bark, root bark-eyewash for snowblindness)	Kindscher 1992:191
Rose, Wild	*Rosa spp*	Industrial (arrows)	Grinnell 1923:179
Rose, Wild	*Rosa spp*	Medicinal (hips-stomach ailments) -- Collected along Tongue River	NCPO 1981a:13
Rose, Wild	*Rosa spp*	Food (fruit), Medicinal (various-stem, bark, petals, root), Ceremonial (ghost-sprigs)	Hart 1976, Grinnell 1923, Gilmore 1977, Rogers 1980
Rose, Wild	*Rosa woodsii*	Medicinal (inner bark-diarrhea, heart trouble)	Kindscher 1992:191
Raspberry, Wild	*Rubus idaeus and var. gracilipes*	Food (berry)	Grinnell 1923, Tallbull 1993:46
Raspberry, Black	*Rubus leucodermis (occidentalis)*	Blackcap; Food (berry)	Grinnell 1923
Dock, Curly	*Rumex crispus (introduced)*	Food; Industrial (yellow dye-leaves, stems), Medicinal (poultice, lungs-root)	US Congress 1978, Grinnell 1923, Gilmore 1977, Tallbull 1993:47
Begonia, Wild	*Rumex venosus*	Industrial (red and yellow dye-leaves and root), Medicinal (birth)	Grinnell 1923, Rogers 1980
Arrow Leaf	*Sagittaria latifolia*	Food (Tuber)	Tallbull 1993:48
Willow, Peach-leaf	*Salix amygdaloides*	Medicinal (unspecified-diarrhea; bark-styptic); Ceremonial (stems-worn during Sundance because believed to alleviate thirst)	Kindscher 1992:196
Willow, Narrow Leaved	*Salix exigua*	Ceremonial (tree-constructed sweat-lodges); Industrial (tree-cordage); Medicinal (leaves-fever, diarrhea), Ornamentation (Sundance apparel)	Blankenship 1905:22, Tallbull 1993:60
Willow	*Salix longifolia*	Industrial (various wood products), Religious (sacred construction-stems), Medicinal (various-plant), Horse Medicine (root), Food (bark)	Hart 1976, Rogers 1980
Willow	*Salix longifolia*	Ceremonial (used by Medicine Lodge dancers)	Grinnell 1923
Willow	*Salix spp*	Ceremonial (sweatlodge) -- Collected along Tongue River	NCPO 1981a:13
Greasewood	*Sarcobatus vermiculatus*	Food (twigs), Industrial (pipestems, tapers)	Blankenship 1905:23, Tallbull 1993:69

APPENDIX F
NORTHERN CHEYENNE TRADITIONAL CULTURAL PLANT USE

COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Sweetgrass	*Savastana odorata*	Ceremonial (sacred bundle; pipe)	Dorsey 1905:76-77
Sweetgrass	*Savastana odorata*	Ceremonial (ritual purification; ceremony into womanhood)	Grinnell 1923:130, 131
Sweetgrass	*Savastana odorata*	Ceremonial -- Collected along Tongue River	NCPO 1981a:13
Bulrush, Tule (Hard Stem)	*Scirpus acutus*	Food; Industrial (mats)	Deaver and Tallbull 1988, Grinnell 1923, Tallbull 1993:50
Bulrush, Nevada	*Scirpus nevadensis*	Food (roots); (mats-stems)	Grinnell 1923
Groundsel, Arrowleaf	*Senecio triangularis*	Medicinal (sedative-leaves, root)	Grinnell 1923, Tallbull 1993:51
Buffaloberry	*Shepherdia argentea*	Medicinal (fruit-to sweeten medicine)	Kindscher 1992:281
Buffaloberry	*Shepherdia argentea*	Food (berry), Medicinal (ophthalmic-bark, digestive-berry)	Deaver and Tallbull 1988, US Congress 1978, Hart 1976, Grinnell 1923
Buffaloberry, Russet (Thorny Buffaloberry)	*Shepherdia canadensis (Lepargyraea)*	Food (berry), Medicinal (ophthalmic-bark)	US Congress 1978, Hart 1976, Grinnell 1923, Tallbull 1993:28
Goldenrod	*Solidago mollis*	Medicinal	Deaver and Tallbull 1988
Mallow, Scarlet Globe	*Sphaeralcea coccinea*	Ceremonial (used in Contrary Society ceremonies); Medicinal (plant-used to sweeten medicine)	Kindscher 1992:209, Tallbull 1993:31
Mallow, Globe	*Sphaeralcea coccinea (Malvastrum)*	Food; Medicinal (general-leaves, stem, root; poultice, burn protection-root)	Deaver and Tallbull 1988, Grinnell 1923, Rogers 1980, Tallbull 1993:31
Bothersome Weed (Chickweed	*Stellaria media*	Medicinal (liver, skin, obesity0	Tallbull 1993:52
Snowberry	*Symphoricarpos occidentalis*	Religious (Medicine Lodge altar)	Tallbull 1993:63
Tansy, Common	*Tanacetum vulgare (introduced)*	Medicinal (weakness, dizziness-leaves, blossoms)	Grinnell 1923, Tallbull 1993:53
Dandelion, Common	*Taraxacum officinale (introduced)*	Medicinal (liver, digestion, diuretic, diabetes), Food (salad greens)	Deaver and Tallbull 1988, Tallbull 1993:54
Saxafrage, James' (Red Medicine)	*Telesonix jamesii (Saxafraga)*	Medicinal (lungs-plant)	Grinnell 1923, Tallbull 1993:49
Meadowrue, Few-flowered	*Thalictrum sparsiflorum*	Horse Medicine (root)	Grinnell 1923, Tallbull 1993:74
Birthroot	*Trillium ovatum*	Medicinal (childbirth	Tallbull 1993, 55

APPENDIX F
NORTHERN CHEYENNE TRADITIONAL CULTURAL PLANT USE

COMMON NAME	SCIENTIFIC NAME	USES	REFERENCES
Cattail	*Typha latifolia*	Food (stems, seeds), Religious (bedding in Sundance), Industrial (mats-leaves), Medicinal (poultice, chafing-fruit; cramps-root, leave)	Grinnell 1923, US Congress 1978, Hart 1976, Tallbull 1993:67
Nettle, Stinging	*Urtica dioica*	Medicinal (digestive-root), Industrial (fiber-stems)	Deaver and Tallbull 1988, Rogers 1980, Gilmore 1977
Grouseberry/Whortleberry/Fireberry	*Vaccinium scoparium*	Medicinal (appetite-berry, leaves, stem), Food (Berries)	Grinnell 1923, Tallbull 1993:76
Grape, Wild	*Vitis riparia (vulpina)*	Food (berry)	Grinnell 1923, Rogers 1980
Yucca	*Yucca glauca*	Industrial (cosmetic), Medicinal (anti-inflammatory, hair loss, various others-root), Horse Medicine (plant)	Deaver and Tallbull 1988, US Congress 1978, Rogers 1980, Tallbull 1993:56
Mushrooms		Food -- Collected along Tongue River	NCPO 1981a:13
Peppermint		Medicinal -- Collected along Tongue River	NCPO 1981a:13
Spearmint		Medicinal -- Collected along Tongue River	NCPO 1981a:13

Appendix F
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APPENDIX G

TABLE 1 – LOCATION OF NORTHERN CHEYENNE HOMESTEADS

TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
3S	38E	35	SENE	Paul Red Nose House/Cabin	GLO	1920	Rosebud Creek
3S	39E	12	SESE	Cares Not House /Cabin	GLO	1920	Rosebud Creek
3S	39E	12	SESW	Chas. Lone Wolf House/Cabin	GLO	1920	Rosebud Creek
3S	39E	13	NENW	Wm. Lone Wolf House/ Cabin	GLO	1920	Rosebud Creek
3S	39E	14	NWNE	Two Moons House/Cabin	GLO	1920	Rosebud Creek
3S	39E	15	SENE	S. Lame Warrior (?) House Cabin	GLO	1920	Rosebud Creek
3S	39E	15	NESW	Porcupine House/Cabin	GLO	1920	Rosebud Creek
3S	39E	15	SWSW	Chief Porcupine House/Cabin	GLO	1920	Rosebud Creek
3S	39E	22	NWNW	Jim Rock Rose (?) House/Cabin	GLO	1920	Rosebud Creek
3S	39E	22	SWNW	Lonie or Lorrie (/) Dog House/Cabin	GLO	1920	Rosebud Creek
3S	39E	22	SESW	Black White Man House/ Cabin	GLO	1920	Rosebud Creek
3S	39E	21	NENE	Mark Rock Rose House/Cabin	GLO	1920	Rosebud Creek
3S	39E	21	SENW	Bert (?) Two Moons House/Cabin	GLO	1920	Rosebud Creek
3S	39E	28	NENW	Kills Back House/Cabin	GLO	1920	Rosebud Creek
3S	39E	28	SWNW	W.C. Elks(?) House/Cabin	GLO	1920	Rosebud Creek
4S	39E	6	NENW	Turkey Leg House/Cabin	GLO	1920	Rosebud Creek
4S	39E	6	NESW	Mud Turtle House/Cabin	GLO	1920	Rosebud Creek
4S	39E	6	NWSW	Eagle Feather House/Cabin	GLO	1920	Rosebud Creek
4S	39E	6	NWSW	High Bear House/Cabin	GLO	1920	Rosebud Creek
3S	39E	31	SWNW	Rowland House/Cabin	GLO	1920	Rosebud Creek
3S	39E	29	NWSW	Willis Rowland House/Cabin	GLO	1920	Rosebud Creek. The S/O Wm. Rowland
3S	39E	30	SESE	Jos(?) Deafy	GLO	1920	Rosebud Creek

APPENDIX G

TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
6S	39E	8	NWSW	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
6S	39E	17	SESW	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
6S	39E	20	NESW	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
6S	39E	29	SENE	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
6S	39E	29	SWSE	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
6S	39E	15	SESE	Unidentified House	GLO	1908	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).

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TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
6S	39E	23	NWSW	Unidentified House	GLO	1908	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	5	SESE	Unidentified Cabin	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	9	SESW	Unidentified Cabin	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	21	SENE	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	20	NESE	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	19	SWSW	Unidentified House	GLO	1893	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).

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TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
7S	39E	3	SESW	Unidentified House	GLO	1918	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	1	SWSE	Unidentified House	GLO	1918	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	12	SWNE	Unidentified House	GLO	1918	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	15	NESE	Unidentified House	GLO	1918	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
7S	39E	24	SESE	Dugout	GLO	1918	Upper Rosebud Creek: In Sept. 1891, some of the White River Cheyenne (from Pine Ridge) settled south of Kirby, near the headwaters of of the Rosebud (Weist 1977:142 and Moore 1987:230).
2S	40E	25	NWNW	Indian Cabin	GLO	1887	Rosebud Creek
2S	40E	25	NESW	Indian Cabin	GLO	1887	Rosebud Creek
2S	40E	26	SENE	Indian Cabin	GLO	1887	Rosebud Creek
2S	40E	35	NWNW	Indian Cabin	GLO	1887	Rosebud Creek
2S	40E	35	SENW	Indian Cabin	GLO	1887	Rosebud Creek

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TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
2S	40E	35	SWSW	Indian Cabin	GLO	1887	Rosebud Creek
2S	40E	34	SESE	Indian Corral	GLO	1887	Rosebud Creek
2S	40E	34	NWSW	Indian Cabin	GLO	1887	Rosebud Creek
2S	40E	33	SWSE	Tepee	GLO	1887	Rosebud Creek
2S	40E	25	SWSW	Black Crane House/Cabin	GLO	1920	Rosebud Creek
2S	40E	35	NWNE	Mr. Teeth House/Cabin	GLO	1920	Rosebud Creek
2S	40E	34	NESE	Iron Hand	GLO	1920	Rosebud Creek
3S	40E	6	SENE	Indian Cabin	GLO	1887	Rosebud Creek
3S	40E	6	SESE	Indian Cabin	GLO	1887	Rosebud Creek
3S	40E	5	NESE	Indian Cabin	GLO	1887	Rosebud Creek
3S	40E	4	NWNE	Indian Cabin	GLO	1887	Rosebud Creek
3S	40E	5	SWSW	Little Chief House/Cabin	GLO	1920	Rosebud Creek
3S	40E	2	NWSE	Indian Cabin	GLO	1887	Muddy Creek-East Fork
3S	40E	11	NWNE	Indian Cabin	GLO	1887	Muddy Creek-East Fork
3S	40E	24	NWSE	Wm. Rowland House/Cabin	GLO	1887	Muddy Creek-East Fork. Wm. (sometimes called Long Knife) was married to a So. Cheyenne woman. He, his wife and their children settled along Muddy Creek in 1881. Wm. was a Cheyenne "Interpretor" (Stands In Timber and Liberty 1967:238).
3S	40E	26	SENE	2 Indian Cabins	GLO	1887	Muddy Creek-East Fork
3S	40E	26	SESE	Indian Cabin	GLO	1887	Muddy Creek-East Fork
3S	40E	35	NENE	Tepee	GLO	1887	Muddy Creek-East Fork
3S	40E	36	NWNW	Indian Cabin	GLO	1887	Muddy Creek-East Fork
3S	40E	35	NESE	Ch. Tall Bull House/Cabin	GLO	1920	Muddy Creek-East Fork
3S	40E	34	SWSW	David Wounded Eye House/Cabin	GLO	1920	Muddy Creek-East Fork

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TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
3S	40E	2	NENE	Blind Bull (1) House/Cabin	GLO	1920	Muddy Creek-East Fork
3S	40E	2	NESE	Blind Bull (2) House/Cabin	GLO	1920	Muddy Creek-East Fork
2S	41E	30	NWNE	Tepee	GLO	1887	Rosebud Creek
2S	41E	33	NENE	Cheyenne Agency Bldg	GLO	1887	Rosebud Creek
2S	41E	21	SWSE	Robert Yellow Fox House/Cabin	GLO	1920	Rosebud Creek
2S	41E	34	NENE	Little White Man House/Cabin	GLO	1920	Rosebud Creek
2S	41E	19	NENE	Big Nose House/Cabin	GLO	1920	Rosebud Creek
3S	41E	13	SWSE	Indian Cabin	GLO	1887	Lame Deer Creek
3S	41E	24	NWNE	Indian Cabin	GLO	1887	Lame Deer Creek
3S	41E	14	NENW	Indian House	GLO	1920	Lame Deer Creek
3S	41E	14	SWNE	Andy First Call(?) House/Cabin	GLO	1920	Lame Deer Creek
3S	41E	25	SESW	Indian Cabin	GLO	1920	Lame Deer Creek
3S	41E	3	SESW	Spotted Elk House/Cabin	GLO	1920	Lame Deer Creek
3S	41E	24	NWNE	Louie Seminole House/Cabin	GLO	1920	Lame Deer Creek
5S	42E	36	NENW	Indian Cabin (Medicine Top?)	GLO	1887	Tongue River-East Side
5S	42E	36	NWNW	Indian Tepees (Little Chief's Camp?)	GLO	1887	Tongue River-East Side
5S	42E	25	SWSW	Indian Tepees (Little Chief's Camp?)	GLO	1887	Tongue River-East Side
4S	43E	24	NWSW	Frank Lightening House/Cabin	GLO	1922	Tongue River-West Side
6S	43E	18	NENW	Indian Cabin	GLO	1887	Hanging Woman Creek/ East of Tongue River
6S	43E	19	SESE	Indian Cabin	GLO	1887	Hanging Woman Creek/ East of Tongue River
1N	44E	27	NENE	Wolf's House (1)	GLO	1888	Tongue River-East Side
1N	44E	34	NENE	Wolf's House (2)	GLO	1888	Tongue River-East Side
2S	44E	34	NENE	Big Head House/Cabin	GLO	1885	Tongue River-East Side

APPENDIX G

TWN	RNG	SEC	QTR/QTR	DESCRIPTION	REF	MAP DATE	COMMENT
3S	44E	3	NWNE	White Wolf House/Cabin	GLO	1885	Tongue River-West Side
3S	44E	3	NWSE	Mission-Catholic	GLO	1885	Tongue River-East Side
4S	44E	7	NENE	Indian Cabin (Prob. Black Kettle)	GLO	1887	Tongue River-West Side
5S	45E	24	NWSW	S. Birdsall (sp?) House/Cabin	GLO	1892	Otter Creek/ East of Tongue River

TABLE 2 – OTTER CREEK HOMESTEADERS

NAME	MEN	WOMEN	BOYS	GIRLS	PONIES	CATTLE	WAGONS	BUFFALO HIDES	LOG HOUSES	OTHER
Bob Tail Horse	1	1			4				1	8 miles south of Otter Creek, House not finished
Hollow Log	1	3			4					8 miles south of Otter Creek, Little Chief's Band
White Frog	1	2		1	5					Little Chief's Band
White Bull	1	4			7	25	1	2	1	Medicine man
Tangles Horn Elk	2	2	1		4	4		15		
Gray Whisker	1	1	1	1	4			1		
Buffalo Wallow (female)		2	2		7			10		4 Bear Skins
Red Plume	2	2	2		6	2		5	1	Little Chief's Band
Tall White Man (1)	2	1		3	3			2	1	Father/son
Tall White Man (2)	1	1			4			4		Father/son
White Hawk	1	2	2	1	2			5	1	
Wolf Ear	1	2			5			12	1	1 stove
Little Crow	2	1		1	7		1	8	1	
Big Crow	1	2		2	5			5		Little Chief's Band
Black Mocassin	5	2	1	1	3					

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NAME	MEN	WOMEN	BOYS	GIRLS	PONIES	CATTLE	WAGONS	BUFFALO HIDES	LOG HOUSES	OTHER
Wolf That Lies Down	3	1			4					
Red Bird	1	1	1	1	1			4		
Lone Wolf	1	2		1	3			4		
Big Head	2	1	1	1	1					Little Chief's Band
Crooked Nose (female)		2	1	1					1	
Fly	1	2			2					Little Chief's Band
Tangled Hair	2	3	1		3					Little Chief's Band
Yellow Hair (female)		2	2	1	5			6		Little Chief's Band
White Cow (female)	3	2			5			3		Little Chief's Band
Digging Wolf	3	3	1	3	4			7		
Sand Stone	1	2		2	3	3		9		
Leaning Woman (female)		3			4			4		Little Chief's Band
Sun Bear	3	4	1		7			9		
Big Foot	2	3			5			1		Little Chief's Band
Badger	2	2	2	1	3					Little Chief's Band
Howling Wolf	1	1		2				5		
Buffalo Woman (female)		2	2					3		Little Chief's Band
Tottering Woman		2	1	2	2			10		Little Chief's Band
Elk River	1	4	2	2	5			10		Little Chief's Band
Little Sun	2	4	2	2	3					Little Chief's Band
Elk Woman (female)		3	1		4			3		Little Chief's Band
White Elk	1	1	1		10			1		Little Chief's Band
Little Horse	2	2		2	1			4	1	1 Stove
Bald Eagle	2	1	1	2	3	3		2		

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NAME	MEN	WOMEN	BOYS	GIRLS	PONIES	CATTLE	WAGONS	BUFFALO HIDES	LOG HOUSES	OTHER
Black Kettle (Sioux)	1	1	1	1					1	Little Chief's Band
No Name (female)		1			3			2		
Fire Crow	1	1	1	1	4					
Old Wolf	1	1		1	9	3			1	
Shooting Left Hand	2	2			6	3	1	13		
White Horse	3	1		1	4			28	1	
White Wolf, aka Shot In The Head (listed as Spotted Wolf)**	4	3	1	2	6		1	6	1	
Lost Woman (female)		1		1	1			10		
Big Head	1	5	2		3	1			1	
White Moon	1	1	1	7						
Big Head Man (alias All See Him)	1	1	1	1	2					Little Chief's Band
Total	70	99	36	41	193	44	4	213	14	

Notes to Table 2.

50 families, 246 people on Otter Creek/Tongue River

Little Chief's band has 20 families with 101 people.

In a letter dated Aug. 18, 1882 from George Yoakum to Pres. Arthur he states that Chief White Bull's band has settled along the Tongue River and some have builthouses. He also states that some of Little Chief's band visited the Cheyenne in Aug., 1882 and now want to settle in the Tongue River valley.

APPENDIX G

In a report dated Oct. 3, 1882 from Capt. Ewers, 5th Infantry, Ft. Keogh, MT to the Asst. Adj. General, Dept. of Dakota, he states there are 10 houses, nearly completed, on or near the mouth of Otter Cr., and "so situated so each would have 160 acres".

White Bull was a famous Medicine Man (Stands In Timber and Liberty 1998: 53, 105-6).

In a letter from George Yoakum to the Commissioner of Indian Affairs, dated Oct. 20 1882, he states that nearly all of Little Chief's Band have arrived and are on the Tongue River, intending to take up homesteads.

In a letter from George Yoakum to the Commissioner of Indian Affairs, dated Dec. 21, 1882, he states there are 44 families, totaling 224 people of Little Chief's Band on the Tongue River. He also states there are a total of 610 Cheyenne living along Rosebud Cr. and Tongue River.

In George Milburn's April 18, 1883 report to the Commissioner of Indian Affairs, he states that White Bull and his people surrendered at Ft. Keogh in 1877 and settled on Otter Cr. in June 1882. Milburn also states that Little Chief, with 10 or 12 lodges, is still at the Pine Ridge agency.

Milburn attached a rough sketch map of the Tongue River and Otter Cr. Area to his April 18, 1883 report. On this map he indicates there was a camp of 18 lodgeson upper Otter Cr. (prob. At T3S R44E, sec 12 or 13) prior to March 24, 1883, but that this group relocated to near the mouth of Hanging Woman's Cr., at
T5S R42E sec 25 and 26. This group was part of Little Chief's band and was led by Black Wolf, in Little Chief's absence.

In a letter from George Yoakum to Pres. Arthur, dated Dec. 9, 1884, he states that Black Kettle and Big Crow have been deceived into selling their homesteads.

**George Milburn's survey list of 1883, lists this person as Spotted Wolf. His attached hand drawn map also shows Spotted Wolf's cabin. However, the GLO map in 1885shows a cabin that corresponds with this location on Milburn's map, but the GLO indicates this is the cabin of White Wolf. There are two other Spotted Wolfs listed during this time period: one is the Spotted Wolf who is with Black Wolf, down on Hanging Woman Cr., and the second is with Little Wolf's band on Muddy Cr.

APPENDIX G

TABLE 3 TONGUE RIVER HOMESTEADERS		
Age	**Name**	**On 1883 Milburn List**
52	Badger	X
21	Bear Comes Out	
67	Big Head	X
45	Big Head Man	X
58	Black Eagle	
43	Black Horse	
50	Bob Tail Horse	X
29	Box Alder	
23	Chubby	
40	Elk Shoulders	
41	Elk Shows His Horn (2)	
61	Elk Shows His Horns (1)	
20	Fire Wolf	
23	Hard Ground	
20	Hollow Breast	
31	King Fisher	
26	Lightning	
63	Little Horse	X
53	Long Roach	
37	Looks Behind	
22	Medicine Bird	

APPENDIX G

TABLE 3 TONGUE RIVER HOMESTEADERS		
37	Medicine Top	
26	Mrs. Little Whirl Wind	
39	Mrs. Wolf (widow)	?
38	Red Bird (2)	?
32	Red Bird (3)	?
21	Red Wolf	
48	Sharp Nose	
30	Sitting Man	
34	Sponge	
28	Spotted Hawk	
25	Swallows	
41	Two Feathers	
41	Walking Horse	
41	Walks Easy	
45	Walks Night	
66	White Bull	X
59	White Frog	X
52	White Hawk	X
48	White Horse	X
47	White Moon	X
64	Wolf Black	
54	Wolf Ear	X
32	Yellow Eyes	
21	Young Bear	

APPENDIX G

TABLE 3 TONGUE RIVER HOMESTEADERS		
46	Young Bird	

Department of the Interior 1899, National Archives Record Group 75

APPENDIX B

NORTHERN CHEYENNE TRIBE
ENVIRONMENTAL PROTECTION DEPARTMENT
P.O. BOX 128
LAME DEER, MT 59043
(406) 477-6506

January 7, 2013

The following are air quality comments in reference to Docket No. FD 30186:

The Northern Cheyenne Indian Reservation in southeastern Montana is a Class I air shed and all air quality issues in the area, especially the proposed TRRC project, will impact the air quality on the NCIR.

The environmental impact statement must address air pollutants that are emitted from the locomotives that pull the coal cars. These air pollutants must be minimized by the use of emission controls on the locomotives to the maximum extent possible.

During construction of this project dust abatement or PM10 activities, such as watering of open piles of dirt and gravel areas must be done. Existing dirt roads and construction dirt roads must be watered down at all times. Applying magnesium chloride to the dirt roads is another alternative for dust abatement activities.

When coal cars are transported along the railroad track, mitigation should be required so that no coal dust is emitted during transport.

Also, weed control along the right of way of the railroad tracks needs to be addressed. There are times during the dry season in southeastern Montana that wildland fires occur. These fires can be started from sparks from the railroad car's wheels. When fires start then air quality issues arise and can affect the residents living in the area, including people on the Northern Cheyenne Indian Reservation.

Additional mitigation should also be considered. Protection of the Northern Cheyenne tribe's Class I air is important to protect the health and welfare of the people that live on the NCIR and the environment, which includes the wildlife and plants.

APPENDIX C

NORTHERN CHEYENNE TRIBE
ENVIRONMENTAL PROTECTION DEPARTMENT
P.O. BOX 128
LAME DEER MT 59043

January 7, 2013

From: Joe Walksalong, Jr., Water Quality Coordinator

Re: Water Quality comments Tongue River Railroad

Docket No. FD-30186, Tongue River Railroad Company, Inc.—Rail construction and operation—in Custer, Powder River, and Rosebud Counties, Mont.

Impact Categories

6. Water Resources:

Proposed Railroad alignments have the potential to affect tribal surface waters in T2SR43E, T2S44E, T3S44E based on the drawings the Tongue River from the north boundaries of the Northern Cheyenne Reservation to the confluence with Otter Creek then from Logging Creek to the Tribal Teepee Ranch area along the River. Numerous tributaries to the Tongue River along the proposed alignments would have to be crossed for the construction of the railroad. A Permit such as the Construction General Permit may require Tribal certification for the construction impacts from storm water runoff which can increase sedimentation loads into the River. Plans for sediment control and erosion control will need to be drafted and reviewed by all stakeholders of surface waters in the Tongue River which includes the Tribe. The alternative which shows crossing Tribal lands would not be feasible for railroad construction where impacts to Tribal surface waters can be avoided. Reservation Creek to Stebbins Creek and numerous small tributaries would be impacted by construction activities. Cultural uses and potential impacts to springs on Tribal lands must be considered high priority for no impacts.

APPENDIX D

Northern Cheyenne Tribe

Historic Preservation Office

January 7, 2013

Cultural Resource regarding the Tongue River Railroad

The National Register Bulletin 38 a Traditional Cultural Property can be defined generally as "one that is eligible for inclusion in the National Register because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community."

There are many different approaches to defining the idea of cultural practices or beliefs of a living community as it relates to the cultural landscape. For the Northern Cheyenne the places of spiritual significance are not necessarily a result of Cheyenne making the place sacred. It is because they have always been sacred or had spiritual significance.

The Northern Cheyenne should have the ability to determine what is sacred and what is not and the federal government should not be making those determinations for us. There is no one law that specifically identifies Traditional Cultural Properties (TCPs) however places of cultural significance should be considered along with other aspects of the environment during environmental impact assessments and planning in association with the tribes or in this case the Northern Cheyenne Tribe. Laws such as the National Historic Preservation Act (NHPA) and the National Environmental Policy Act (NEPA) are a good start to assessing the impacts to cultural resources.

Cultural resources can be generally referred to as all elements of the physical and social environment that we place a value on and that Cheyenne people think is important. It could be:

- Part of the Cheyenne worldview
- Treaty rights
- Religious beliefs
- Their special communities
- Lifeways
- Air, water, plants, animals, and other things

For the Cheyenne, cultural places have many different meanings. It could include:

- Places associated with spirits including place names
- Ancestral lands that have traditional places with a narrative tradition
- Oral histories of cultural heroes
- Locations of "spirit" animals"
- Places where important resources are found (paints, certain rocks, etc)
- Graves
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- Places where special cultural events that occurred
- Places of origins

All of these elements give the Cheyenne a "sense of who they are within the physical and spiritual realm" and the "power that comes from the place." It is more than just the physical space they occupy. Places connect with the human experience and their beliefs. Places and the cultural landscape:

- Teach us moral lessons
- These are places where we become grounded again
- They form our identity
- Affect us psyche and in turn affects our physical body

The place that we hold as being sacred or significant can include: stories; spiritual associations; ritual practices at those locations that bring therapeutic qualities and others

The physical or tangible evidence can include the following:

- Rock alignments
- Rock art
- Stone circles
- Fasting sites
- Piercing sites
- Cultural landscapes and features
- Burial mounds
- Plants, animals, and water
- And others

The Northern Cheyenne have a rich and colorful history in southeastern Montana. All the above can be found in any location where we have ancestral lands. Certainly these cultural sites should be taken into consideration when we discuss impacts to the environment.

I have not revealed specific information and sacred or spiritually significant sites of the Northern Cheyenne for a number of reasons. As a tribe that has TCPs within the EIS it is important that we be an integral part of the planning process. Part of the planning process includes the idea of identification and evaluation of those sites once we reach that stage. At this point, we have given you enough information that should present you with a good idea and understanding on what we should be addressing as part of the EIS.

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January 7, 2013

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